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MAN, MACHINE, OR MUTANT: WHEN WILL ATHLETES ABANDON THE HUMAN BODY?

I. PERFORMANCE ENHANCEMENT UNDER OFFICIAL REVIEW

When Scout Bassett lost her right leg to a chemical fire in China as a child, the only “prosthetic” she thought she would ever have was one made of leather straps with a foot attached by masking tape.¹ When Manny Banuelos, the top Yankees pitching prospect at only age twenty-one, blew out his elbow, it seemed his dream of becoming a big leaguer might never come to fruition.² Luckily, both Bassett and Banuelos live in a world bursting with the fruits of technological innovations developed specifically with athletes in mind.³ After her adoption and relocation to the United States, Bassett was able to devote herself to sports, particularly triathlons, with the help of her carbon fiber Flex-Foot Cheetah prosthetic leg.⁴ Banuelos underwent Tommy John surgery to repair his elbow and reopen the door to his professional baseball career.⁵

However, these Cinderella stories of opportunity does not end so easily; having taken advantage of the benefits of technology, Bassett and Banuelos must now face questions and criticisms that could threaten their eligibility to compete.⁶ Some sports entities seek to

1. See Mae Ryan, *Paralympic Athletes Gain Ground from Prosthetics Made in Orange County*, S. CAL. PUB. RADIO (Aug. 3, 2012), <http://www.scpr.org/news/2012/08/03/33622/look-socal-prosthetics-give-athletes-olympic-chanc/> (introducing single-amputee para-triathlete from California).

2. See John Sickels, *Yankees Prospect Manny Banuelos Needs Tommy John Surgery*, MINOR LEAGUE BALL (Oct. 2, 2012, 12:16 PM), <http://www.minorleagueball.com/2012/10/2/3443874/yankees-prospect-manny-banuelos-needs-tommy-john-surgery> (discussing need for Banuelos’ surgery after his sore elbow led to blow out).

3. For a discussion of advances made in prostheses technology, see *infra* notes 32-37 and accompanying text. For a discussion of advances made in surgical procedures for athletes, see *infra* notes 72, 83-84, 92, 96-98 and accompanying text.

4. See Ryan, *supra* note 1 (describing Bassett’s experiences with Össur foot). Bassett now trains for four hours every day in preparation for international competitions as well as the 2016 Olympic Games. See *id.* (noting Bassett, at age twenty-three today, is premiere para-triathlete).

5. See Sickels, *supra* note 2 (noting Banuelos will miss entire 2013 season and possible 2014 season recovering from Tommy John surgery). For a discussion of Tommy John surgery, see *infra* notes 83-87 and accompanying text.

6. See Rose Eveleth, *Should Oscar Pistorius’s Prosthetic Legs Disqualify Him from the Olympics?*, SCI. AM., July 24, 2012, available at <http://www.scientificamerican.com/article.cfm?id=scientists-debate-oscar-pistorius-prosthetic-legs-disqualify-him-olympics> (discussing incorporation of machine into human body for competition as one of most immediate concerns with allowing disabled athletes with prosthetics to compete alongside able-bodied athletes). For a discussion of concerns regarding

prevent technology from redefining the games by banning high-tech methods, such as the use of prosthetics and certain questionably reparative surgeries, as well as the players who utilize them.⁷ If such prohibitions succeed, athletes like Basset, who defy their disabilities with prosthetic limbs, will never be able to compete in the Olympics, despite years of training, dedication, and perseverance.⁸ Athletes, like Banuelos, who are too injured to play, yet who still believe they have more playing years left in them, will simply have to accept that their professional baseball careers are over.⁹ In order to prevent discrimination against athletes on the basis that their uses of enabling technologies fundamentally alter traditional notions of sports, thorough and in-depth consideration must be accorded to accurately understand the extent to which such technologies are actually performance enhancing as opposed to merely performance enabling.¹⁰

athletes using prostheses to compete against able-bodied athletes, see *infra* notes 45-53 and accompanying text. For a discussion of criticisms regarding performance enhancing surgical procedures, see *infra* notes 73-77, 89, 94 and accompanying text.

7. For a discussion of International Association of Athletics Federations' efforts to keep Oscar Pistorius out of Olympics, see *infra* note 44-46 and accompanying text. For a discussion of reasons behind drive to keep surgery out of sports, see *infra* note 152 and accompanying text.

8. See Christopher Bidlack, Comment, *The Prohibition of Prosthetic Limbs in American Sports: The Issues and the Role of the Americans with Disabilities Act*, 19 MARQ. SPORTS L. REV. 613, 637 (2009) (recognizing perspective of some sports entities who do not want prosthetics to create something new in realm of sports competition). An athlete who uses prosthetic legs to play basketball may never be allowed to play against able-bodied players because of the supposed ability to jump higher enabled by the prosthetics. See *id.* at 635 (discussing realistic hypothetical ban due to likely belief that prosthetics will confer unfair advantage on users by giving them ability to jump higher).

9. See Serge F. Kovalski, *Pitcher's Treatment Draws Scrutiny*, N.Y. TIMES, May 12, 2011, at B15, available at <http://www.nytimes.com/2011/05/12/sports/baseball/disputed-treatment-was-used-in-bartolo-colons-comeback.html?pagewanted=all> (describing baseball pitchers' need for surgery after being sidelined by elbow and arm injuries). Bartolo Colon, a pitcher for the Oakland Athletics, could not throw the ball without experiencing terrible pain due to his elbow injury, but he still wanted to get back into baseball. See *id.* (discussing Colon's determination to find way to return to sport despite his injury).

10. See Mark Hamilton, *Elective Performance Enhancement Surgery for Athletes: Should It Be Resisted?*, 36:2 ACTA UNIVERSITATIS PALACKIANAE OLOMUCENSIS 39, 42 (2006), available at <http://www.gymnica.upol.cz/index.php/gymnica/article/view/74/68> (defining sports in traditional sense as "competitive events involving a variety of physical (usually in combination with other) human skills, where the superior participant is judged to have exhibited those skills in a superior way").

Athletic competition values perseverance, strength, skill, fitness, and above all, integrity.¹¹ The integrity of the sport is offered as justification for banning athletes from using illegal and dishonest means of achieving an unfair advantage over their competitors.¹² While integrity may appear to be a clear and solid standard for sports, the concept loses some of its clarity and security when challenged by modern technological advances that enable arguably unqualified competitors to become not only qualified, but to more than exceed qualifications.¹³ Nevertheless, technology is undeniably an element of sports, and time has shown that as technology evolves, sports similarly adapt.¹⁴ As technology continues to progress, most notably in the areas of prosthetic development and surgical advancements, the unending athletic drive to achieve and succeed will only continue to blur the lines that define who is eligible to compete and against whom.¹⁵

11. See Richard H. McLaren, *Is Sport Losing Its Integrity?*, 21 MARQ. SPORTS L. REV. 551, 557 (2011) (explaining protecting “Spirit of Sport” is same as protecting “integrity, honor and rewarding natural abilities, sound training, and hard work”).

12. See *id.* (expressing that cheating destroys positive values associated with sports integrity, which thereby justifies pursuit and punishment of doping violations).

13. See *id.* at 551 (discussing growing “erosion of sporting integrity” caused by athletes using performance enhancing drugs in athletic competitions); see also Gregor Wolbring, *Oscar Pistorius and the Future Nature of Olympic, Paralympic and Other Sports*, 5:1 SCRIPTED 139, 140 (2008), available at <http://www.law.ed.ac.uk/ahrc/script-ed/vol5-1/wolbring.asp> (recognizing “increasing demand for, and acceptance of, improvements to and modifications of the human body (structure, function, abilities) beyond its species-typical boundaries”). The social concept of “transhumanism” has emerged to explain the notion that the human species is still in an early developmental phase and the desire to continue to improve the human condition through technology. See *id.* (elaborating on belief in enhancing human capabilities “beyond typical Homo sapiens boundaries”).

14. See Andy Miah, *Rethinking Enhancement*, 109:3 ANNALS N.Y. ACAD. SCI. 301, 306 (2007) (describing technology as “unequivocally a necessary characteristic of many sports without which they would not be possible”). Miah suggests an “optimal limit,” a boundary line in sports evolution, which once crossed, compromises the particular character of the sport. See *id.* (illustrating relationship between technology and sports); see also Philip Jacques, *Is Congress’ Latest Efforts to De-juice Professional Sports Unconstitutional?*, 6 DEPAUL J. SPORTS L. & CONTEMP. PROBS. 97, 121 (2009) (discussing how rules in sport may change and grow over time but such changes do not reduce sport to “less pure form”). It is possible that something that is considered cheating and a “perversion of a sport” today in twenty or so years will simply be within the boundaries of the rules of the sport. See *id.* (using change in sporting equipment as example of development of rules theory).

15. See Miah, *supra* note 14, at 306 (describing how new technology and science change social concepts and values concerning sports, especially when involving internal and external modification of athletes). See Ashley Henshaw, *Extreme Performance Enhancement Techniques in Sports*, SYMPTOMFIND (Nov. 22, 2011), <http://www.symptomfind.com/health/extreme-performance-enhancement-techniques/> (recognizing possible motivations for use of sports performance enhancement techniques among professional athletes, including larger salary, better team

Technological innovations facing the sports world today are vast and constantly expanding.¹⁶ Today, the Flex-Foot Cheetah blade, described by its developers as “the optimal sprinting foot,” allows athletes like Oscar Pistorius to run and even sprint to the same levels as able-bodied runners.¹⁷ However, one day, cybernetic legs, which would fuse organic and inorganic material and exist inside athletes, may emerge and create a new type of prosthesis, which would more completely simulate the human leg and its capabilities.¹⁸ Developing performance enhancing technologies for sports generates polarized reactions because many athletes and critics believe not only that “performance-enhancing equipment is not a traditional, permissible advancement for competition,” but also that “the focus should be on the competitive [athletic] fields, not

trades, more exposure, and, among amateur athletes, recognition by scouts, better scholarships for college, picked by better teams); *see also* Rachel Tiplady, *Advanced Prosthetics Are About to Transform Sport*, CNN MONEY: FORTUNE (Aug. 29, 2012, 12:17 PM), <http://tech.fortune.cnn.com/2012/08/29/advanced-prosthetics-are-about-to-transform-sport/> (suggesting additional prosthetic industry market growth due to government grants to help war veterans); Ryan, *supra* note 1 (describing veterans’ interest in bionic limbs equipped with microprocessors to allow prosthetic-users to “adapt to individual walking styles and different environments”).

16. *See* Erin E. Floyd, *The Moderate Athlete: Natural Athletic Ability or Technology at Its Best?*, 9 VILL. SPORTS & ENT. L.J. 155, 168 (2002) (recognizing recent technological advancements in sports). In particular, swimming has seen the advent of high-tech body suits that supposedly enhance a swimmer’s performance by three percent, high-powered tennis racquets have emerged in tennis, and endurance athletes now often supplement their training with altitude-simulating nitrogen tents. *See id.* at 168-71 (listing several recent sports innovations); *see also* Helen Thompson, *Performance Enhancement: Superhuman Athletes*, NATURE (July 18, 2012), <http://www.nature.com/news/performance-enhancement-superhuman-athletes-1.11029> (describing enhancement as rising to much higher level than it was at time of original Olympic Games in Greece). Some have characterized the quest for greater performance enhancing technologies in sports as having “an arms-race quality.” *See id.* (quoting Thomas Murray, former president of Hastings Center, which is a “bioethics and public-policy foundation in Garrison, New York”).

17. *See* Cheetah, ÖSSUR, <http://www.ossur.com/?PageID=13462> (last visited Oct. 25, 2012) (describing product of choice for amputee athletes due to high performance nature of carbon fiber foot). Many elite amputee athletes in addition to Pistorius currently use the Cheetah foot, including Jerome Singleton, Jonnie Peacock, and April Holmes. *See id.* (recognizing Cheetah foot as choice product for many world champions). “Designed for unilateral/bilateral transtibial and transfemoral (above-the-knee and below-the-knee) amputees,” the J-shaped “foot” attaches behind the socket and attempts to mimic the anatomical foot and ankle joint of able-bodied athletes. *See id.* (explaining how carbon fiber foot helps amputee athletes compensate for “impaired physiology”).

18. *See* Shawn M. Crincoli, *You Can Only Race If You Can’t Win? The Curious Cases of Oscar Pistorius & Caster Semenya*, 12 TEX. REV. ENT. & SPORTS L. 133, 182 (2011) (highlighting fact that Pistorius’s current prosthetic legs are “external” and “visible,” but someday new prosthetics may be available that are instead internal and make users look like every other runner on outside).

the technology.”¹⁹ Some even criticize athletes using new and advanced technology to help them compete for challenging established sports rules and “affecting the purity of the sport.”²⁰ Such language has great potential to give rise to discrimination claims, and sporting entities must proceed carefully to avoid discriminating against athletes on the basis of their disabilities.²¹

Taking the discussion of performance enhancement strategies even further, certain surgeries may in fact improve athletes’ abilities so drastically as to reach the point of ultimate enhancement.²²

19. See Floyd, *supra* note 16, at 169-70 (exploring example of high-tech body suits in swimming). One scholar asserted that races should be determined on fair terms based on the athletic merits of the athletes. See *id.* at 169 (emphasizing athletes should not be labeled as “better” because of their swimsuit or advantages it may convey). In tennis, some are concerned that improving racquet technology will be “a substitute for physical strength.” See *id.* at 170-77 (rejecting notion of focusing on “matching an opponent’s equipment” in favor of focusing instead on “physical strength, conditioning and proper swings”). Nitrogen tents, used to prepare for endurance events, “increase the levels of red blood cells and naturally occurring erythropoietin.” See *id.* at 171 (noting some athletes’ view that no harm exists in such use because they would have received same training had they traveled to high altitude location instead). Further complicating the issue is the division between “sports equipment manufacturers’ desire to introduce ‘profitable, technologically advanced merchandise’, and athletic governing bodies’ desire to protect the integrity of their sport.” See *id.* at 166 (discussing involvement of sports product designers in debate); see also Tiplady, *supra* note 15 (describing fundamental values of Olympic Games as competition between humans). As Dr. Peter Van de Vliet explained, “[t]he spirit of the Games is to test human ability against human ability.” *Id.* (noting opinion of Medical and Scientific Director of International Paralympics Committee); see also Thompson, *supra* note 16 (explaining that although cyclist could perform better with EPO or bike motor, “that is not the point of sport . . . and neither are drugs”).

20. See Paul Hochman, *Bionic Legs, i-Limbs, and Other Super Human Prostheses You’ll Envy*, FAST COMPANY (Feb. 1, 2010), <http://www.fastcodesign.com/1514543/bionic-legs-i-limbs-and-other-super-human-prostheses-youll-envy> (stating justification by one top IAAF official for keeping Pistorius out of Olympics). Some able-bodied athletes do not want to compete against disabled athletes using prosthetics because they do not want to be beaten by one-legged competitors. See *id.* (noting fear by some able-bodied athletes of being beaten by athletes who are not just “normal,” but are in fact “better than human”). As one practitioner in orthotics and prosthetics described, “They fear that you aren’t just ‘normal’ again, you’re better than human. And nobody wants the one-legged guy beating you. You’re not bragging about that at the dinner table, I guarantee you.” *Id.* (quoting Matt Albuquerque, founder of Manchester, New Hampshire’s Next Step Orthotics and Prosthetics).

21. See *id.* (comparing such language to that used to keep certain races out of professional sports like basketball, and girls out of Little League).

22. See John Niash, *Genetically Modified Athletes: Forget Drugs. There Are Even Suggestions Some Chinese Athletes’ Genes Are Altered to Make Them Stronger*, DAILY MAIL (Aug. 1, 2012, 1:28 PM), <http://www.dailymail.co.uk/news/article-2181873/Genetically-modified-athletes-Forget-drugs-There-suggestions-Chinese-athletes-genes-altered-make-stronger.html> (discussing questions of illegal performance enhancement that arose as result of China’s 16-year-old swimmer Ye Shiwen’s astonishing “world-record-breaking performance”). As John Leonard, the American director

Some athletes have begun to use, or believe they could choose to use, surgeries to improve upon naturally limited human capabilities, instead of merely repairing damaged body parts.²³ Corrective laser eye surgery is one example of a less intrusive, more accepted form of performance enhancing surgery.²⁴ Another level of performance enhancing surgery includes Tommy John surgery, which supposedly allows baseball pitchers to throw the ball harder by tightening or replacing a ligament in their arms.²⁵ If innovative surgeries continue with no reservations, it may not be long before operations create bionic arms that increase pitching velocity by 20 mph, better than perfect vision with zoom capacities, and artificial lungs capable of higher levels of maximal oxygen consumption than athletes would naturally have.²⁶ At this point, such surgical enhancements are not yet prohibited or condemned by sports governing bodies, which has led to an ambiguity that blurs the boundaries between legitimate and illegitimate enhancements.²⁷

This Comment evaluates the debate between using technology to enable athletes to compete despite their disabilities and taking advantage of technology to unfairly enhance athletic performance.²⁸ Section II discusses both the recent growth of the use of prosthetics in sports and the controversy that surrounds the fairness of such use, as well as the increasing occurrence of enhancement surgeries that may be more elective than necessary to continue

of the World Swimming Coaches Association, stated, "Any time someone has looked like superwoman in the history of our sport they have later been found guilty of doping." *See id.* (explaining reasoning behind questions asking whether Ye Shiwen had undergone genetic manipulation).

23. *See* Miah, *supra* note 14, at 305 (noting questions of broad social concern regarding enhancement surgeries).

24. *See* Hamilton, *supra* note 10, at 40 (presenting nose surgery to improve breathing and eye surgery to improve vision as two safe, less invasive surgeries).

25. *See* Quinn Norton, *Sports Enhancement and Life Enhancement: Different Rules Apply*, HUMANITY+ (Feb. 22, 2010), <http://hplusmagazine.com/2010/02/22/sports-enhancement-and-life-enhancement-different-rules-apply/> (distinguishing Tommy John surgery as allowing modern athletes to become "highly-enhanced creature[s]").

26. *See* Hamilton, *supra* note 10, at 45 (describing possible advances through surgery or medicine that may help athletes achieve excellence without natural abilities or training); *see also* Crincoli, *supra* note 18, at 182 (considering creation of artificial organs in future that may "surpass the abilities of the organs and limbs they replace").

27. *See* Norton, *supra* note 25 (questioning how "major surgical modifications" are not viewed negatively while testosterone supplements to build arm strength are prohibited); *see also* Hamilton, *supra* note 10, at 40 (advocating for sports organizations to establish moral policies in preparation of impending nature of more technologically advanced procedures for enhancement).

28. For a discussion of issues for concern regarding performance enhancement, *see infra* notes 32-99 and accompanying text.

their participation in a sport.²⁹ Section III demonstrates that the parameters currently in place for determining whether athletes, such as Oscar Pistorius or Tommy John, may participate in competitive athletic events may no longer be sufficient in the ever-evolving age of technology.³⁰ Section III offers several recommendations as to how courts, legislative bodies, and private entities should confront and tackle the question of where to draw the line between accommodating for disabilities and unfair competitive advantage by means of modern technology.³¹

II. TRADING IN PLASTIC FOR CARBON FIBER, ADVIL FOR THE SCALPEL

A. The Evolution of Prosthetics: From Captain Hook to Oscar Pistorius

While prosthetics in the past were dominated by the stereotype of demoralizing attachments that would forever limit a user's mobility and ability to move in the same way as other people, technology has revolutionized the conception of prosthetics today.³² Not only are modern prosthetics far more visually attractive, but according to

29. See Floyd, *supra* note 16, at 176-77 (recognizing recent technological advancements in sports and discussing opposing principles to "unbridled" use of technological innovations). "Fairness to the participants in all sports is frequently cited as a reason to restrict the use of technological innovations." *Id.* at 175 (describing fairness as pertaining to both established rules and availability of technology). If a complete alteration of a sport were to occur, the success of competition would be based on which athlete had the best equipment instead of on which athlete had the most ability, talent, and training. See *id.* at 176 (offering example of technological take-over). For a discussion of debates specifically surrounding prostheses, see *infra* notes 32-70 and accompanying text. For a discussion of debates specifically surrounding questionably performance enhancing surgeries, see *infra* notes 71-99 and accompanying text.

30. For a discussion of the athletic biography of Oscar Pistorius, see *infra* notes 38-58 and accompanying text. For a discussion of the athletic biography of Tommy John, see *infra* notes 83-86 and accompanying text.

31. For a discussion of suggested solutions, see *infra* notes 177-233 and accompanying text.

32. See Hochman, *supra* note 20 (describing designers' views of modern prosthetics as "exuberant, unapologetic carbon-fiber sparkle"). No longer are they stiff, pink pieces of plastic kept at the back of the hospital, but now artificial limbs are shiny chrome or effectively disguised as flesh. See *id.* (highlighting use of same materials used to make sports cars and jet airplanes in prosthetics, thereby making them more appealing and visually attractive); see also *Sports and Prosthetics*, AMPUTEE PROSTHETICS (Sept. 20, 2012), <http://amputeeprosthetist.com/prosthetics-in-sports/> (detailing development of prosthetics for athletic activities such as running). Conventional prosthetic legs were not designed for running – they merely gave amputees "the ability to walk with a very natural gait." See *id.* (referencing needs of amputees for prosthetics that would accommodate their needs as athletes).

Hugh Herr, a renowned developer of prosthetic technology, they also make amputee athletes “stronger, faster, and, to some, more desirable,” than able-bodied individuals.³³ Fast and strong prosthetics can even be considered “sexy and powerful and threatening,” thereby making some disabled individuals “willing to chop off a perfectly good limb” in order to obtain new prosthetic “machines.”³⁴ The development of prosthetics has advanced to such a degree that athletes can participate in nearly every sport with the right apparatus or fixture.³⁵ For instance, D.J. Vaderwerf, whose leg was amputated when he was nine months old due to a birth defect, was able to play on his high school football team as quarterback with a pros-

33. See Hochman, *supra* note 20 (describing Hugh Herr’s belief that as prosthetics allow athletes to perform better, and as they become more visually “glamorous,” they make amputees seem more “beautiful”). Comparing limb prostheses to eyeglasses, Herr suggests that thirty years from now amputees will not care about human beauty when their limbs can be sculptures as “beautiful” as bridges, cars, cell phones, and other achievements of modern technology. See *id.* (discussing how eyeglasses are prosthetic devices that accommodate poor eyesight, and although they were initially purely medical devices they have now become “expensive fashion items”). Carrie Davis, an Olympic triathlon competitor, uses a mechanic arm made of black carbon fiber and titanium that makes “cool whirring sounds when she picks up a wine glass.” See *id.* (describing amputee athletes’ pleasure and enjoyment of “futuristic” parts of their bodies). Additionally, double leg amputees have the unique opportunity to grow from 5-foot-8 inches to 6 feet tall through the use of prosthetic high-tech gear. See *id.* (noting that, in addition to possible height extension, variations in prosthetic “feet” can allow for “more energy storage and return” depending on foot size).

34. See *id.* (regarding new machines as highly “lustrous” and “efficient”). Herr finds the decision to remove parts of the body in order to acquire better prosthetic technology comparable to trading in an old car for a newer, hotter one. See *id.* (expressing excitement by many at notion of newer and better technology). Michael Bailey, a victim of an accident that severed three fingers from his left hand, explained that he would amputate the remaining two fingers on his hand if by doing so he could obtain an entirely robotic hand. See *id.* (describing Bailey’s belief that robotic hand makes him feel stronger because machine incorporation into his body makes him feel “above human”). Bailey is one of many amputees who have removed healthy tissue in order to “make room for more powerful technology.” See *id.* (comparing second amputations to new car models).

35. See *Sports and Prosthetics, supra* note 32 (explaining various options for prosthetics in sports). For lower-leg amputees, the “J-shaped” prosthetic running leg is made of light-weight carbon fiber, which acts as “a shock absorber” and also creates energy to propel the runner forward in a similar way a “natural foot” would. See *id.* (describing how technology of material of prosthetic legs works to simulate natural body function). For upper-limb amputees, “terminal devices” help amputees participate in specific sports through the use of a “quick disconnect” unit on the wrist, which allows them to “easily switch between their ‘everyday’ prosthetic, and their adaptor.” *Id.* (noting how such “‘adaptive’ prosthesis” can help amputees hold items such as “steering wheels, golf clubs, and fishing poles”). For example, when competing in swimming, amputees can use a “Tablada Swimming Hand,” a prosthetic similar in overall length to an actual arm. See *id.* (recognizing need in every sport for prosthetics to answer specific needs of amputees).

thetic leg.³⁶ Technology will undoubtedly continue to evolve to develop prosthetics with more sophisticated improvements in design and functionality so that someday such enhancements “will allow amputees to participate in every sport and level of competition.”³⁷

Although disabled athletes competing in professional sporting events are not a new phenomenon, problematic issues with the use of prosthetics in sports have recently gained greater attention, especially through the challenges and successes of double-amputee sprinter Oscar Pistorius from South Africa.³⁸ Pistorius was born without fibulas, one of the two bones that support the calf muscle, in either leg, and before he was a year old both of his legs were amputated below the knee.³⁹ In order to compete, he uses J-shaped carbon fiber blades, known as “Cheetahs,” which he attaches to his legs.⁴⁰ After beginning sprinting in January 2004, Pistorius set a world record and won gold in the 200-meter sprint at the Athens Paralympics in August 2004.⁴¹ He also competed against able-bodied

36. See Kris Budden, *Sweetwater (Tenn.) Quarterback Plays with Prosthetic Leg*, USA TODAY HIGH SCHOOL SPORTS, <http://www.usatodayhss.com/news/article/sweetwater-high-school-qb-prosthetic-leg-dj-vanderwerf> (last visited Oct. 27, 2012) (noting Vanderwerf’s coach’s decision to let him play despite concerns about his prosthetic leg).

37. *Sports and Prosthetics*, *supra* note 32 (describing how technology will continue to improve prosthetic designs, materials used, and harness styles to improve prosthetic industry).

38. See Peter Charlish & Dr. Stephen Riley, *Should Oscar Run?*, 18 FORDHAM INTELL. PROP. MEDIA & ENT. L.J. 929, 931 (2008) (noting participation of blind runners, wheelchair-bound archers, and gymnast with wooden leg in Olympic Games). Marla Runyon competed in the 2000 and 2004 Olympic Games in the 1500 meter and 500 meter, despite her legally blind status; archers Paola Fantato and Neroli Fairhall competed in archery in the 1996 and 1984 Olympics, respectively, despite being wheelchair-bound; and gymnast George Eyser competed in the 1904 Olympics, despite his wooden leg. See *id.* (recognizing disabled athletes’ abilities to overcome their handicaps in athletic competition); see Wolbring, *supra* note 13, at 140-41 (noting Pistorius’ significant impact on Olympics and Paralympics). Pistorius has even been given the title “the fastest man on no legs.” Tiplady, *supra* note 15 (illustrating “shining spotlight” Pistorius’ success has given to prosthetics in sports); see also *Sports and Prosthetics*, *supra* note 32 (highlighting debate that although “their original purpose was to ‘level the playing field,’ many claim the devices actually give amputees an advantage in sports competitions since they perform better than a natural leg”).

39. See C.S., *Prostheses in Sport: Running Foul?*, THE ECONOMIST (Aug. 15, 2011, 3:42 PM), <http://www.economist.com/blogs/babbage/2011/08/prostheses-sport> [hereinafter C.S., *Prostheses*] (describing nature of Pistorius’ physical disability that he has dealt with his entire life).

40. See Charlish & Riley, *supra* note 38, at 929 (explaining means by which Pistorius can compete as sprinter).

41. See C.S., *Prostheses*, *supra* note 39 (highlighting beginning of Pistorius’ remarkably successful sprinting career). Pistorius won the gold in a competition against single-amputees, and he also holds records in the double-amputee category for the 100, 200, and 400 meter sprints. See Crincoli, *supra* note 18, at 141 (detail-

ied runners in South Africa in 2005, won an open competition in the 100 meter, and finished sixth in the 400 meter event.⁴²

Pistorius attracted even greater international attention when he indicated his desire to compete at the Beijing Olympic Games in the summer of 2008 in either the 200 or 400-meter sprints.⁴³ However, in 2007, the International Association of Athletics Federations (“IAAF”) adopted Competition Rule 144.2(e), which prohibits the “use of any technical device that incorporates springs, wheels or any other element that provides the user with an advantage over another athlete not using such a device.”⁴⁴ The IAAF’s position reflected many critics’ views that prosthetics give athletes who use them “an unfair advantage over other runners.”⁴⁵ An investigation, which compared Pistorius’ gait and physiology to those of other athletes, followed, and in 2008 the IAAF and the International Olympic Committee (“IOC”) held that Pistorius was ineligible to compete in the 2008 Olympic Games.⁴⁶

Determined to prove that he deserved to compete in the Olympics against able-bodied runners, Pistorius appealed to the Court of

ing Pistorius’ accomplishments within one year of beginning sprinting). The Paralympics categorize athletes according to their levels of disability in an attempt “to pit similarly situated athletes against one another.” *See id.* (explaining complicated rules of eligibility for Paralympics in order to ensure fair opportunity among athletes of similar disability levels).

42. *See* Crincoli, *supra* note 18, at 141 (recognizing Pistorius’ success even against able-bodied runners at South African Championship).

43. *See* Charlish & Riley, *supra* note 38, at 929 (noting start of dispute between Pistorius and International Association of Athletics Federation (“IAAF”)).

44. *See id.* at 930 (describing action by IAAF to prevent disabled athlete using prosthetic legs from competing against able-bodied athletes at Olympic Games); *see also* Crincoli, *supra* note 18, at 142 (discussing press conference in which IAAF President affirmed Pistorius’ eligibility to compete so long as there was no scientific evidence demonstrating his prosthetics rendered him with advantage).

45. *See Sports and Prosthetics*, *supra* note 32 (explaining several reasons why critics believe prosthetics may create unfair advantage for users). Two reasons why prosthetics may be deemed unfair are: (1) “the J-shape prevents excessive movement,” and (2) “the device requires [the wearer to expend] less energy.” *Id.* (citing two reasons for debate on fairness of prosthetic use in competition with non-prosthetic users).

46. *See* C.S., *Prostheses*, *supra* note 39 (stating decision by IOC and IAAF that effectively kept Pistorius out of 2008 Games in Beijing); *see* Crincoli, *supra* note 18, at 143 (describing findings of Dr. Elio Locatelli’s Cologne Report that Pistorius indeed had “‘significant biomechanical advantages’ due to his flatter stride and the decreased energy loss from his Cheetah blades, as opposed to if he had ankle joints”). In effect, Pistorius was barred from competing against able-bodied athletes in IAAF-sanctioned events because his use of the Cheetah blades was held to violate IAAF Competition Rule 144.2(e). *See* Crincoli, *supra* note 18, at 143 (indicating evidence by Cologne Report that Pistorius’ Cheetah legs constituted one device rendered impermissible by IAAF).

Arbitration for Sport (“CAS”) to overrule the IAAF’s decision.⁴⁷ In arguing his case, Pistorius offered significant expert testimony in order to demonstrate that his prostheses do not give him a competitive advantage over non-prostheses-using athletes.⁴⁸ The debate over a possible competitive advantage asked “whether an amputee, with less muscle mass, has a metabolic advantage over those with their limbs intact.”⁴⁹ Although the physics of movement behind a sprinter who uses a Flex Foot Cheetah is about the same as that of a sprinter with an anatomical leg, able-bodied runners in fact can achieve a 240 percent energy return from their legs while Cheetah-using runners can only reclaim 90 percent of the energy.⁵⁰

47. See Crincoli, *supra* note 18, at 134-43 (summarizing Pistorius’ appeal against IAAF decision “that his disability creates an advantage on the track, one that should render Pistorius ineligible to compete against able-bodied athletes”). In his appeal, Pistorius challenged the process of the IAAF in arriving at its decision as “procedurally unsound,” he contested the decision as “unlawfully discriminatory,” and, finally, he argued that the Cheetah Flex-Foot does not violate Rule 144.2(e). See *id.* at 143 (elaborating Pistorius’ three main arguments on appeal to CAS); see also Matthew J. Mitten & Timothy Davis, *Athlete Eligibility Requirements and Legal Protection of Sports Participation Opportunities*, 8 VA. SPORTS & ENT. L.J. 71, 79 (2008) (explaining authority of CAS). The CAS provides an arena in which international athletes and sports organizations can work “to resolve their disputes through a single, independent and accomplished sports adjudication body,” and it also understands and acts in recognition of the need for uniformity in “international sports governance.” See *id.* at 79 (describing ability of CAS to apply rules of various sports organizations in order to protect “integrity of athletic competition, while also safeguarding all athletes’ legitimate rights and adhering to fundamental principles of natural justice”). The CAS acknowledges the importance of ensuring that “athletic participation may be denied only if necessary to achieve a legitimate objective of international sports competition consistent with the Olympic spirit.” *Id.* at 90 (calling principle of sport human right).

48. See Hochman, *supra* note 20 (discussing “mixed blessings” nature of Oscar Pistorius’ prostheses). Expert witness Hugh Herr testified in Pistorius’ appeal to the CAS to overturn the IAAF ruling, stating that Pistorius experiences both advantages and disadvantages to running with prostheses relative to runners using their natural legs. See *id.* (listing advantages as spending “34% less time in air between steps,” requiring “21% less time to swing his legs between steps,” and “metabolic cost of running that is 17% lower than other runners,” and disadvantage of having his foot remain in contact with ground “14% longer on each sprinting step than an able-bodied sprinter’s”).

49. C.S., *Prostheses*, *supra* note 32 (explaining difficulty in examination because measurements of “individual’s metabolic capacity” can vary over time and are really “only ever indicators of potential performance”). The tests showed that Pistorius exerted 25% less energy than able-bodied athletes. See *id.* (recognizing other able-bodied athletes in fact had higher aerobic capacity levels than Pistorius); see also Crincoli, *supra* note 18, at 148 (discussing laboratory testing undergone by Pistorius under his own experts). The “Houston Report,” compiled by Pistorius’ scientific experts, “demonstrated that Pistorius used the same amount of oxygen as other runners at sub-maximal speed, and that Pistorius fatigued normally.” See *id.* (answering question of whether Pistorius would not get as tired as quickly as other athletes due to his body tiring or because of lung capacity).

50. See Ryan, *supra* note 1 (describing how in cases of both able-bodied athletes as well as prosthetic-using athletes, individuals “exert[] high forces on the

In addition, Pistorius' "unique stride" came under review, due to the fact that it seemed to allow Pistorius to use less time to reposition his limbs while airborne than other runners.⁵¹ Only very few able-bodied athletes and no other prostheses-using athletes can emulate Pistorius' particular running style, which suggests that Pistorius' success is due to his mastery of a particular technique and not merely to the use of high-tech prosthetics.⁵² As Scout Bassett pointed out, if all it took to run record times was to put on Cheetah

ground through their toes, the balls of their feet or the front of their blade, and that force propels them forward"). In the case of the Cheetah foot, the energy from the athlete compresses the j-shape causing the carbon fiber to spring back and allow energy to return to the athlete. *See id.* (explaining athletes using prosthetics must make up for difference in loss of energy by moving their legs faster and pushing off harder from ground).

51. *See C.S., Prostheses, supra* note 32 (discussing elements of runner's stride as well as effect of prostheses on Pistorius' stride). "A runner's stride can be divided into time spent with the foot in contact with the ground and time spent airborne, which is when the limbs are repositioned." *Id.* (explaining that most successful elite sprinters strive to minimize foot contact and maximize air time). However, studies have shown that all able-bodied runners spend the same amount of time in the air (0.12 seconds) between steps, and the distinguishing factor is the distance each runner is able to cover in that interval. *See id.* (noting lack of difference at peak velocity between serious amateur sprinters and Olympic elite sprinters). The studies demonstrated that Pistorius' contact time with the ground was slower than other runners, but they also found that his airborne time to reposition his limbs was faster than other runners. *See id.* (describing effect of Pistorius' prostheses on some elements of his stride in relation to able bodied runners). Pistorius' ground contact time is 0.11 seconds, which is usually under one-tenth of a second for top athletes. *See id.* (noting difference in contact time with one foot on ground). Pistorius takes 0.09 seconds to reposition his limbs in the air while other runners typically take around 0.12 seconds. *See id.* (recognizing element of stride in which Pistorius may have slight advantage). In fact, Dr. Peter Weyland of Southern Methodist University has suggested that Pistorius' airborne quickness may be an effect of the prostheses being lighter in weight than a human lower leg. *See id.* (highlighting possibility that lacking weight of limbs may contribute to greater speed for athletes using prostheses). Despite this minimal time difference, the studies showed that Pistorius maintains a precarious balance of his body when he runs. *See id.* (explaining Pistorius' use of gravitational torque, involving "leaning forward and remaining constantly on the precarious tipping point between falling to the ground and maintaining controlled forward momentum with each step," which most runners are not able to maintain over entire distance of sprint). As seen in rail-cam footage, Pistorius bobs up and down less than most other runners, which demonstrates "his mastery of the technique." *See id.* (recognizing difficulty of most able bodied sprinters to achieve such smooth stride).

52. *See id.* (promoting position that Pistorius has become successful sprinter because of his skills and ability to achieve particular smooth stride, despite his disability); *see also* Crincoli, *supra* note 18, at 148 (noting that although Pistorius does not bounce very much when he runs, some sprinters in fact try to "bounce more" to enhance their speed). In fact, although the Cheetah blades had been available to amputee athletes for a decade, no other runner had run fast enough with the blades to be able to compete at the level of able-bodied runners. *See id.* at 149; *see also* Eveleth, *supra* note 6 (stating Pistorius' scientific team's conclusion that Pistorius was "physiologically similar but mechanically different" to able-bodied runner because he uses oxygen in same way but moves his body differently).

blades, every Paralympian would be competing in the Olympics at the same level of performance as Pistorius.⁵³

Fortunately for Pistorius, in 2008 the CAS ruled that he was eligible to compete in the Olympics and thereby overturned the IAAF's ruling of ineligibility.⁵⁴ The CAS determined that the manner in which Rule 144.2 was enacted and applied was "procedurally defective," and accordingly it found that the IAAF did not meet its burden of proof of demonstrating Pistorius had an "overall net advantage" by a "balance of probability."⁵⁵ However, the seemingly great success for Pistorius in front of the CAS came with a limiting condition.⁵⁶ Not only would the ruling not be applicable to future cases involving other prosthetic-using athletes, but Pistorius himself would only be allowed to compete against able-bodied athletes so long as "the evidence regarding the Cheetah blades . . . did not

53. See Ryan, *supra* note 1 (emphasizing Flex Foot Cheetahs do not give athletes an unfair advantage in and of themselves); see also Crincoli, *supra* note 18, at 149 (asking "if the Cheetah blades were such an advantage, why had no other athlete until then been able to use them for that purpose?").

54. See Crincoli, *supra* note 18, at 134 (acknowledging CAS's decision to focus on extensive research of Pistorius and his Cheetah blades in its analysis). As the "supreme arbiter on questions of eligibility within federation sports," the CAS, in its ruling that Pistorius did not possess any "measurable advantage" over other runners, opened the door for Pistorius to compete at the 2012 London Olympic Games. See *id.* (highlighting impact of important CAS decision for one particular prostheses-using athlete).

55. *Id.* at 143-48 (discussing CAS' determination of procedural problems in IAAF investigation as well as lack of proof of advantage). The CAS found that the IAAF likely enacted Rule 144.3(e) with Pistorius in mind, despite the IAAF's attempt to claim that it had introduced the rule to prevent spring technology in running shoes. See *id.* at 144 (explaining CAS' rejection of IAAF justification because running shoe issue predated enactment of Rule 144.2(e) and had been specifically dealt with by another rule). The CAS also found that the actual testing the IAAF had Pistorius undergo distorted the analysis of whether he had an advantage running with prosthetic legs. See *id.* (stating IAAF looked only at Pistorius running in straight line and did not consider start or acceleration phase, which were portions of sprint in which Pistorius would be disadvantaged). Ultimately, the CAS held that "at least some IAAF officials had determined they did not want Mr. Pistorius to be acknowledged as eligible to compete in international IAAF-sanctioned events, regardless of the results that properly conducted scientific studies might demonstrate" and that the IAAF's management of the case "fell short of the high standards that the international sporting community is entitled to expect from a federation such as the IAAF." *Id.* at 146 (highlighting fact that Pistorius' selected scientist for IAAF examinations was "frozen out" as evidence of IAAF officials' efforts to keep Pistorius from attaining eligibility).

56. See *id.* at 135 (describing CAS holding as "narrow in scope").

change.”⁵⁷ As several scholars have pointed out, the CAS decision means “Pistorius is eligible to compete – for now.”⁵⁸

As part of his appeal, Pistorius also argued that the IAAF’s decision to deny him eligibility, effectively banning him from competition, was “unlawfully discriminatory.”⁵⁹ The Convention on the Rights of Persons with Disabilities (“Convention”) provides those with disabilities a legally binding instrument of protection of participating in the realm of sports.⁶⁰ In particular, Article 30 states that parties to the Convention must recognize and protect the rights of persons with disabilities to participate on an equal basis with others

57. *See id.* (noting substantial possibility for Pistorius’ eligibility to be revoked and terminated if he were to become “the fastest sprinter among all runners”). The CAS ruling was limited to Pistorius’ existing Cheetah blades, so if there are subsequent developments in prosthetic technology, and undoubtedly there will be, that Pistorius wishes to use, the new prosthetics will have to undergo substantial testing and evaluation all over again. *See id.* at 149 (indicating possibility of new testing protocol in future that could determine Pistorius does in fact have advantage with his prosthetics, thereby disqualifying him from competition in Olympics). Additionally, even if another athlete uses the same Cheetah “flex-foot” blades as Pistorius, he or she would still have to undergo testing in order to achieve eligibility. *See id.* (observing policy of CAS to interpret issue on individual basis).

58. *See id.* at 152 (recognizing limitations of CAS ruling on Pistorius as well as other athletes using prosthetics who may wish to compete against non-disabled athletes). If someone were to discover scientific evidence that supports the position that Pistorius does in fact have a “clear overall net advantage,” Pistorius’ case of eligibility would likely be reopened, even though he has already competed in the Olympics against able-bodied athletes. *See id.* at 150 (discussing vagueness of CAS decision in speaking of tests to be carried out to satisfaction of both IAAF and requesting athlete).

59. *See id.* at 146 (noting Pistorius’ argument that IAAF made no effort to find “any alternative solution, modification or adjustment that might permit him to participate in such events on an equal basis with able-bodied athletes,” denying ‘fundamental human rights, including equal access to Olympic principles and values’”).

60. *See* U.N. Secretary-General, *Final Report of the Ad Hoc Committee on a Comprehensive and Integral International Convention on the Protection and the Promotion of the Rights and Dignity of Persons with Disabilities*, Annex 1, U.N. Doc. A/61/611 (Dec. 6, 2006) [hereinafter *Convention on the Rights of Persons with Disabilities*] (incorporating Convention); *see* Elise C. Roy, *Aiming for Inclusive Sport: the Legal and Practical Implications of the United Nation’s Disability Convention for Sport, Recreation and Leisure for People with Disabilities*, 5 E.S.L.J. 1, 1 (2007), available at <http://www2.warwick.ac.uk/fac/soc/law/elj/eslj/issues/volume5/number1/roy> (discussing efforts by UN to address specifically rights of people with disabilities who wish to participate and compete in sports). Prior to the Convention in 2006, the UN had addressed issues of disability and sport, specifically, in 1978 when UNESCO drafted the International Charter on Physical Education and Sport, again in 1982 when the UN drafted the World Programme of Action Concerning Disabled Persons, and in 1993 when the UN created The Standard Rules on the Equalization of Opportunities for Persons with Disabilities. *See id.* at 2 (recognizing efforts by UN to establish rights of disabled persons to sports).

in cultural life, which includes sports.⁶¹ It further indicates that States parties must take appropriate steps and measures to enable disabled persons “to participate on an equal basis with others in recreational, leisure and sporting activities.”⁶² However, the CAS determined that no specific antidiscrimination laws protected Pistorius because the laws of the Principality of Monaco, which has no specific antidiscrimination or disability law, govern issues of substantive law regarding the IAAF Rules.⁶³ In response to the controversy stirred by Pistorius’ participation in the 2012 London Summer Olympic Games, the International Paralympics Committee (“IPC”) laid down stern rules at the start of the 2012 Paralympics on August 29 banning “the use of any device that enhances the athletic performance through ‘machines, engines or robot mechanisms.’”⁶⁴ While the Olympic Charter states that the “practice of sport is a human right,” this declaration may actually only be a “conditional

61. *See id.* at 5 (noting further that States must encourage and promote such participation by people with disabilities).

62. *Id.* at 4-5 (detailing actions States’ parties should take to make sports more widely available to disabled persons).

63. *See* Crincoli, *supra* note 18, at 146-47 (discussing IAAF choice of law provision, which did not provide Pistorius relief under any type of anti-discrimination disability claim). While some countries, such as the United States, do have legislation that specifically prohibits discrimination on the basis of disability, such an option was not available to Pistorius in this case. *See id.* (offering example of Casey Marin’s claim under Americans with Disabilities Act). Although the Convention may offer some anti-discrimination protection to disabled athletes, until the Principality of Monaco becomes a signatory and thereby binds the IAAF to the rules of the convention, anti-discrimination claims may remain unavailable to athletes such as Pistorius. *See id.* (describing limitations of applicability of Convention due to Principality of Monaco’s status as non-signatory).

64. *See* Tiplady, *supra* note 15 (demonstrating IPC’s commitment to strict guidelines and limitations regarding prosthetic usage). The Olympic Games organizers were less than thrilled that “the world saw a disabled athlete as having an advantage over his able-bodied competition.” *Id.* (recognizing organizers’ desire to keep disabled athletes and able-bodied athletes in separate competitions). The IPC’s ban detracts from the technological advancements made to improve prosthetic movement by prohibiting many of the most recent advancements from use in the Games. *See id.* (noting how ban may put dampener on innovation). In particular, “leg systems with bionic ankles,” such as the MA-based iWalk, that “use robotics to mimic missing muscles and sense when to adjust to changing terrain” may be banned although they more accurately simulate natural movement. *See id.* (describing Bedford’s recent developments). Additionally, the Genium’s “state-of-the-art microprocessors” can “sense the user’s gait over 100 times per second,” thereby giving it great potential to be used in track and field events, such as the shot put, because “it can lock at any angle so the athlete could lean back hard onto the leg and push against it.” *Id.* (explaining Germany company Ottobock’s developments to afford amputees more athletic options). The controversial process known as “osteo-integration” used for such new “legs” attaches the prosthetic knee directly to the living bone, which allows the leg to become almost part of the user’s body. *See id.* (recognizing that in light of technological advancement, athletes who have undergone this process may not compete in Games).

right to participate” based on compliance with set eligibility requirements.⁶⁵

For many, the danger of allowing athletes using prosthetics to compete alongside able-bodied athletes arises when “equipment becomes ‘so sophisticated that one cannot adequately distinguish the relative skill levels of the participants in their performances.’”⁶⁶ Although no sports entity in the US has tried to ban the use of prosthetics yet, it is highly possible that a ban on prosthetics may be considered due to “unfair mechanical advantage and safety concerns.”⁶⁷ In particular, sports entities have expressed concerns that prosthetics, such as the Cheetah blade, offer a mechanical advantage in storing energy, and that amputee athletes have the ability to avoid wear and tear of muscles and joints.⁶⁸ The prevalence of this concern heightens the risk that disabled athletes will be excluded from sports because they differ from the norm due to limitations caused by their disabilities.⁶⁹ Sports governing bodies will have to

65. International Olympic Committee, Olympic Charter, Fundamental Principles of Olympism, Art. 4, http://www.olympic.org/Documents/olympic_charter_en.pdf (last visited Oct. 7, 2012) (describing right of every individual to practice sport “without discrimination of any kind and in the Olympic Spirit, which requires mutual understanding with a spirit of friendship, solidarity and fair play”); see also Mitten & Davis, *supra* note 47, at 73 (noting lack of actual legal right established by international law or human rights agreements to participate in sports competitions); Roy, *supra* note 60, at 5 (noting that although several UN instruments identified sport as human right, such recognitions were not considered legally binding).

66. See Floyd, *supra* note 16, at 168 (describing how “the very nature of the sport is irrevocably altered” by performance-enhancing equipment).

67. See Bidlack, *supra* note 8, at 620-21 (suggesting likelihood that at least “USA Track and Field” will attempt to prohibit prosthetics). In particular, when considering the safety of participants, when prosthetics are “brought to the field of play,” there is a high risk that other athletes could be injured from accidents like collisions. See *id.* at 622 (using track setting as example in which risk of compromised safety to other runners is high due to “tight quarters with athletes moving at their highest level and as fast as they can”).

68. See *id.* at 621 (discussing possible advantages that may result from use of prosthetics). Although significant disagreement exists regarding how much of an advantage Cheetah legs can actually give to a runner, some believe that such blades are more efficient at storing and returning energy than a human ankle. See *id.* at 619-21 (explaining how energy is stored by person’s foot, ankle, and leg with each step taken and then used to push body forward with next step). Additionally, some suggest a significant advantage for amputee athletes in that they do not have to worry about things such as ankle injuries or their recovery times because such athletes can “simply replace old or broken parts.” See *id.* at 622 (questioning whether opportunity for quick-fixes for amputee athletes creates distinct advantage). Not having a lower leg would also relieve amputee athletes of issues such as muscle cramping or fatigue. See *id.* (recognizing such possible advantage is somewhat more abstract).

69. See Crincoli, *supra* note 18, at 135 (recognizing challenges of applying rules of competition to athletes who may not be able to comply with such rules).

seriously consider how to balance fair competition with accommodation and principles of equality of opportunity.⁷⁰

B. Traditions of Rehabilitation Go Under the Knife

Surgery is an unavoidable reality for countless athletes who struggle to repair damage done to their bodies through athletic performance and training.⁷¹ However, with modern technology, elective surgery has become more than reparative: it has become yet another way for athletes to gain a competitive edge.⁷² Questions about ethics and fairness in competition arise when science has progressed to the point where surgical procedures can improve athletes' pre-surgery performances, instead of merely restoring them to their previous levels of performance.⁷³ For instance, LASIK eye surgery is quickly becoming the most popular and common form of surgical performance enhancement among athletes.⁷⁴ While some

70. See *id.* at 136 (offering several significant issues in sports that Pistorius' eligibility claims have promoted).

71. See Robert Lamb, *Is Surgery Changing Baseball?*, DISCOVERY HEALTH (Feb. 11, 2009), <http://health.howstuffworks.com/medicine/surgeries-procedures/surgery-change-baseball1.htm> (noting that around 80,000 ACL injuries occur every year); Arne Ljungqvist, *International Olympic Committee Consensus Statement: Molecular Basis of Connective Tissue and Muscle Injuries in Sport*, 27 CLINICS IN SPORTS MED. 231, 231 (2008) (highlighting prevalence of tendon/muscle/bone injuries that occur annually worldwide). Of the 100 million musculoskeletal injuries per year, thirty to fifty percent are tendon ligament injuries, which may substantially affect an athlete's abilities and may cause "significant loss of performance in sport." See *id.* (describing negative effects of injuries in context of sport).

72. See Hamilton, *supra* note 10, at 39 (discussing how elective surgery may become more and more accepted as it expands its usage to enhance performance). Elective surgical procedures may enhance "general human performance in memory, concentration, vision, and strength." *Id.* (describing range of possibilities from elective surgery).

73. See *Taking a Critical Look at Performance Enhancement*, INT'L COUNCIL OF SPORT SCI. & PHYSICAL EDUC., <http://www.icsspe.org/content/taking-critical-look-performance-enhancement> (last visited Oct. 27, 2012) [hereinafter *Taking a Critical Look*] (listing corrective laser eye surgery, cortisone shots or painkillers, and Tommy John surgery as examples for debate in context of ethics of performance enhancement).

74. See Hamilton, *supra* note 10, at 39-40 (describing how many athletes, such as golfers Hale Irwin, Tom Kite, and Mike Weir, and basketball players Amare Stoudemire and Rip Hamilton, used LASIK surgery to "upgrade their vision to 20/15 or better"); William Saletan, *The Beam in Your Eye*, SLATE (Apr. 18, 2005 12:36 AM), http://www.slate.com/articles/health_and_science/human_nature/2005/04/the_beam_in_your_eye.html (noting baseball players Jeff Bagwell, Jeff Cirillo, Jeff Conine, Jose Cruz Jr., Wally Joyner, Greg Maddux, Mark Redmond, and Larry Walker, and NFL players Troy Aikman, Ray Nuchanan, Tiki Barber, Wayne Chrebet, and Danny Kanell, whose eyesight has improved to 20/15 after LASIK surgery); see also *Laser Eyed Athletes*, LASER VISION (Feb. 1, 2010) <http://www.laser-vision.ie/content/news/6/80/Laser-eyed-athletes> (explaining possibility for LASIK to improve some patients' vision to 20/10, allowing them to see "at a distance of 20 feet what a person of normal vision could see at 10 feet").

receive LASIK to improve their vision, others use it to eliminate the discomfort, irritation, and risk of harm involved with wearing contact lenses during sporting events.⁷⁵ One perceived problem is that LASIK is now being performed not only to rid users of the “inconvenience of contact lenses or to correct a vision defect,” but also to improve and perfect vision for those who never needed glasses or contacts in the first place.⁷⁶ In fact, some athletes argue that multiple Lasik eye surgeries that will give them better than 20/20 vision is a “professional responsibility.”⁷⁷

Despite the inherent risk of LASIK, the reported success stories of athletes who have had the procedure does anything but dissuade other athletes from investing in LASIK and other procedures.⁷⁸ When a surgery like LASIK makes it possible to go from being near-sighted one day to being able to see 20/15 the next day, it is hard to blame athletes for taking advantage of the possibilities available to

75. See *Athletes With An Edge: LASIK Surgery*, LASIKEYESURGERYCORRECTION.COM, http://www.lasikeyesurgerycorrection.com/lasik_athletes.html (last visited Oct. 27, 2012) [hereinafter *Athletes With An Edge*] (describing athletes’ perception that contacts are not worth risk when there is alternative option for better vision); see also *Laser Eyed Athletes*, *supra* note 74 (illustrating hassle of contact lenses due to dust or wind); *Laser Eye Surgery for Sports People*, ACCUVISION, <http://www.accuvision.co.uk/news/media/pdf/23/Laser%20Eye%20Surgery%20for%20Sports%20people.pdf> (last visited Oct. 28, 2012) (explaining struggles of athletes to incorporate contact lenses into their competitions). Jodie Shann, a Triathlete from Great Britain, stated, “I no longer have to plan things around wearing glasses or contacts, and I have no worry with my vision during my sporting exploits.” *Id.* (expressing his excitement of success after having laser eye surgery and no longer having to deal with putting contacts in for early morning training sessions, dry eyes, losing a lens while swimming, getting sweat or sunscreen in his contacts, and general inconvenience of glasses).

76. See Hamilton, *supra* note 10, at 39 (noting how the “uncritical acceptance” of Lasik, “benign eye surgery,” “opens the door to the possibility of athletes having elective surgeries to enhance their sense or to become bigger, stronger, or faster”). “If better than perfect vision is a realistic, attainable goal, then we are looking at the possible development of creating surgically enhanced laboratory athletes who exceed the capabilities of normal humans with perfect vision.” *Id.* (recognizing potential scope of vision surgery).

77. See Norton, *supra* note 25 (describing one attitude toward enhancement); see also *Laser Eyed Athletes*, *supra* note 74 (describing advancement of Tiger Woods from losing sixteen tournaments before LASIK to winning seven of his next ten competitions after LASIK). 20/20 vision is considered “natural” vision.” See *id.* (noting potential degree of improvement from “natural” vision to “eagle eye” vision, which is better than normal vision).

78. See *Athletes Love Lasik Surgery; Team Managers, Doctors Wary of Its Risks*, CLEVELAND.COM, http://blog.cleveland.com/health/2008/03/athletes_love_lasik_surgery_te.html (last updated Sept. 10, 2008, 1:20 PM) [hereinafter *Athletes Love Lasik*] (discussing reluctance of some team doctors to recommend such procedure to elite athletes due to five percent risk of laser eye surgeries resulting in complications including “dry eyes, glares, or seeing halos”).

them and currently permitted by the sports they play.⁷⁹ Myriad athletes have significantly improved their athletic performances after having LASIK.⁸⁰ However, not every person meets the qualifications for LASIK surgery.⁸¹ Consequently, if having the surgery becomes standard practice in the realm of sports, athletes who cannot receive the surgery for whatever reason may find themselves at a severe disadvantage with only their “natural” or normal vision.⁸²

Another procedure gaining popularity, especially among baseball pitchers, is Tommy John Surgery.⁸³ Initially intended to be therapeutic in nature and to repair arm injuries, Tommy John surgery has now gained the reputation of enabling many professional

79. See Saletan, *supra* note 74 (noting reported effects of improvements in sports experienced by athletes after receiving LASIK surgery); Hamilton, *supra* note 10, at 40 (describing extremely short recovery period for LASIK surgery); *Laser Eyed Athletes*, *supra* note 74 (indicating Tiger Woods’ gain of “an improved three dimensional view of the green after laser eye surgery”).

80. See Saletan, *supra* note 74 (discussing success of athletes after upgrading their eyesight). NFL player Danny Kanell stated he could read the eyes of defensive backs; professional golfer Tom Lehman said he could judge distances better; Greg Maddux, an Atlanta Braves pitcher, won nine of his next ten games after the surgery when before he was 0-3 in six starts; golfer Tom Kite won six events on the Champions Tour over the five years following his LASIK surgery; and Hale Irwin won the Senior Professional Golfer’s Association Tour Nationwide Championship after his surgery. See *id.* (stating several athlete testimonials, leading to current belief that if you get LASIK, you become “enhanced”); see also *Laser Eyed Athletes*, *supra* note 74 (describing how golfers who have had LASIK report they can see contrasts and judge distances better, “recognize more clearly, where the green breaks to the right or to the left” and “where it goes uphill and downhill,” and see the ball land on the green).

81. See Leslie Doctor, *LASIK Eye Surgery & Laser Vision Correction for Athletes & Sports*, SEEWITHLASIK.COM, <http://www.seewithlasik.com/docs/lasik-vision-correction-sports.html> (last visited Oct. 27, 2012) (explaining complications in some individuals that may prevent them from having LASIK surgery).

82. See Saletan, *supra* note 74 (describing success stories of athletes who underwent LASIK surgery as evidence of its ability to help them perform better than they had prior to surgery).

83. See Lamb, *supra* note 71 (recognizing growing interest in Tommy John surgery by big league baseball players, especially pitchers, who may now be able to recover from injuries that previously would have ended their careers). In 1974, Los Angeles Dodger Pitcher Tommy John underwent a radical and innovative procedure to repair his damaged ulnar collateral ligament (“UCL”). See *id.* (describing need for UCL reconstructive surgery to save pitchers’ arms and careers). Sports involving throwing place a great deal of stress on the elbow, the strain of which can lead to inflammation, microscopic tissue trauma, and potentially a tear in the UCL, also known as the medial collateral ligament (“MCL”). See *id.* (explaining injury that may lead to necessity for Tommy John surgery). Tommy John surgery grafts a tendon from the patient’s forearm or hamstring into the elbow to replace the torn ligament. See *id.* (describing actual procedure developed by orthopedic surgeon Dr. Frank Jobe). The grafted tendon is woven through holes drilled in the arm’s ulna and humerus bones in a figure eight pattern. See *id.* (comparing procedure to cutting excess from shoelace of one boot and using it to mend broken lace on other boot).

baseball pitchers to return to pre-injury form, or even better than pre-injury form, a feat rare among rehabilitative sports surgeries.⁸⁴ Yet Tommy John surgery is not without dangers and sacrifices.⁸⁵ The operation has its own risks and athletes who have undergone the surgery “face a year of strenuous rehabilitation before they can return to action,” but the surgery is nevertheless becoming “commonplace among big league players.”⁸⁶ Throughout Major League Baseball (“MLB”), it is well publicized that some of the biggest names and prospects, such as the Yankees pitching prospect Manny Banuelos and the Dodgers’ outfielder Carl Crawford, have elected to go under the knife for a chance to extend and improve their professional athletic careers.⁸⁷

Athletes justify the steep time and monetary expenses of the surgery with the potential for more “salary-earning years” that the surgery can add to a pitcher’s career.⁸⁸ The potential danger, however, of the reported success of Tommy John’s post-ulnar collateral

84. See Hamilton, *supra* note 10, at 39 (expressing increasingly common surgical performance enhancement procedure success); Loren Grush, *Tommy John Surgery: The Next Student Steroid?*, FOXNEWS.COM (Sept. 21, 2012), <http://www.foxnews.com/health/2012/09/21/tommy-john-surgery-next-student-steroid/?test=latest> (noting incredible success of surgery in that it allowed John to fully recover and return to baseball in 1976, allowing him to ultimately win more games than he had before his surgery).

85. See Lamb, *supra* note 71 (explaining how surgery is not “quick fix”).

86. See *id.* (describing risks of surgical procedure as major muscles are detached and nerves moved, which can cause infection, fracture, nerve irritation and numbness, yet also recognizing improved statistics in surgeries today to success rate of 83%).

87. See Andrew Marchand, *Manny Banuelos Needs Elbow Surgery*, ESPN NEW YORK (Oct. 2, 2012), http://espn.go.com/new-york/mlb/story/_/id/8452981/new-york-yankees-prospect-manny-banuelos-needs-tommy-john-surgery (discussing Yankees’ decision for 21-year old Banuelos to undergo surgery after disappointing spring performance caused by sore elbow, forcing him to miss 2013 season); Ian Casselberry, *Why Red Sox Delaying Carl Crawford’s Tommy John Surgery Now Impacts 2013*, BLEACHER REPORT (Aug. 21, 2012), <http://bleacherreport.com/articles/1305137-why-red-sox-delaying-carl-crawfords-tommy-john-surgery-now-impacts-2013> (noting then Red Sox outfielder Carl Crawford’s decision in August 2012 to undergo Tommy John surgery, effectively benching him for 2013 season); Geoffrey Ratliff, *Carl Crawford’s Return Will Help Los Angeles Dodgers Reach the Playoffs in 2013*, BLEACHER REPORT (Oct. 20, 2012), <http://bleacherreport.com/articles/1378273-carl-crawfords-return-will-help-los-angeles-dodgers-reach-the-playoffs-in-2013> (predicting tough offensive Dodgers’ lineup for opposing pitchers with Crawford back in game); *Dodgers’ De La Rosa Returns from Tommy John Surgery*, FOXNEWS.COM (Aug. 21, 2012), <http://www.foxnews.com/sports/2012/08/21/dodgers-de-la-rosa-returns-from-tommy-john-surgery/> (recognizing extensive length of recovery time for athletes, like De La Rosa, who underwent Tommy John surgery one year before being able to return to baseball).

88. See Lamb, *supra* note 71 (describing surgery’s substantially successful reputation after several Tommy John surgery recipients affirmed that they could pitch better after surgery than they could before). Tommy John surgery has made it possible for “aging sports stars” to continue their careers despite multiple injuries.

ligament (“UCL”) reconstruction is that an increasingly high percentage of athletes, including student athletes, now “believe the surgery should be performed in [the] absence of injury in order to improve performance.”⁸⁹ For instance, many promising high school baseball pitchers elect to undergo Tommy John surgery to achieve greater throwing speed.⁹⁰ Although many doctors will not breach their duties of professionalism to perform unnecessary surgeries on requesting-yet-uninformed patients, critics have predicted a “troubling future” in which healthy, uninjured athletes elect to have Tommy John surgery to improve their abilities and prolong the length of their professional athletic careers.⁹¹

An additional questionable surgical procedure on the rise is one received by Bartolo Colon, which injected stem cells into his elbow and rotator cuff.⁹² After the surgery, Colon experienced a

See id. (explaining how modern technology has allowed active individuals to put off retirement from athletics for even longer).

89. *See id.* (reporting findings of recent study published by Dr. Christopher Ahmad). The fact that Tommy John returned to baseball fully recovered after his surgery and ultimately won more games than he had before the surgery has had a significant effect on student athletes. *See id.* (describing Dr. Ahmad’s experiences with kids he sees every week with elbow pain, some of whom may have real pain, or others who may say “I’m sore and my performance is down”). The expectation of greater success post-surgery leads student athletes to seek out and request Tommy John surgery. *See id.* (noting belief of Dr. Ahmad that it is “dissatisfaction with performance and a rationale that Tommy John surgery will make them better” that compels student athletes to suggest that they undergo surgery). In addition, coaches have also become more “reckless” with their athletes because they believe injuries that may result from athletes being overworked can be easily taken care of and fixed by surgery. *See id.* (acknowledging disturbing trend researched and studied by Dr. Ahmad and describing some observations by doctors of UCL tears from overuse in baseball players as young as eight years old). In addition, in 2005, 33% of Tommy John patients were younger than eighteen years old. *See id.* (comparing statistics in 2005 to those of 1997, at which time only 12% of Tommy John patients were younger than eighteen); *see also Athletes With An Edge*, *supra* note 75 (discussing how it is expected that more athletes will take advantage of LASIK in the future, including college quarterbacks and other key players who aim to “improve their odds of placement with a professional team”).

90. *See Grush*, *supra* note 84 (noting speed has superseded strength as primary goal of many student athletes). In fact, many athletes “believe the surgery can allow you to throw more effectively.” *Id.* (stating reason why student athletes seek Tommy John surgery according to Dr. Christopher Ahmad, “an associate professor or orthopedic surgery at Columbia University and head team physician for the New York Yankees”).

91. *See Lamb*, *supra* note 71 (discussing possible consequence of growing fame of surgery).

92. *See Howard Bryant*, *Bartolo Colon Surgery: New Arms Race?*, ESPN (May 25, 2011 5:00 PM), <http://sports.espn.go.com/espn/commentary/news/story?id=6588918> (describing another aggressively progressive procedure becoming available to athletes); Janie McCauley, *Bartolo Colon Suspended 50 Games for Positive Test*, ASSOCIATED PRESS (Aug. 22, 2012 7:33 PM), *available at* <http://sports.yahoo.com/news/bartolo-colon-suspended-50-games-173426359—mlb.html> (explaining innovative

"revival" in which he was in the starting rotation of the New York Yankees, pitching harder than ever.⁹³ Although such a procedure is not to the level of gene therapy, it still raises questions of cheating in the context of new scientific, medical, and technological evolution.⁹⁴ The difference between Colon using surgery to hold off retirement brought on by age-based physical limitations and Lance Armstrong attempting to do the same thing but with steroids becomes harder to define and determine.⁹⁵

The debate regarding permissible surgeries for enhancing athletic performance becomes even more complicated when, instead of merely fixing certain muscles or organs, athletes in fact remove parts of their bodies to make themselves more competitive.⁹⁶ Simona Halep, a Romanian professional tennis player determined to succeed in professional sports, underwent breast reduction surgery in order to ease her back pain and improve her movement on the court.⁹⁷ A wide spectrum of performance enhancing tech-

procedure conducted on Colon collected fat and bone marrow stem cells and injected them into his ailing right elbow and shoulder).

93. See Bryant, *supra* note 92 (highlighting Colon's post-surgery success after missing entire 2010 season due to elbow problems).

94. See *id.* (discussing gene therapy as well as prior issues of cheating during "steroid era" to distinguish Colon's surgery as different from drug use). The National Institutes of Health describe gene therapy as experimental procedures that either inject genes into patients' cells in order to replace a disease-causing gene with a healthy one, or insert new genes from another person. See *id.* (distinguishing gene therapy from stem cell injections). The possibilities are vast, as posed by a hypothetical situation in which research uses former MLB pitcher Randy Johnson's genes to create "Captain America style, the next super-pitcher." See *id.* (recognizing possible extent of technological development in pursuing highest level of athletic achievement).

95. See Kevin Kaduk, *Bartolo Colon's Stem Cell Treatment Opens A New Can of Worms*, YAHOO! SPORTS (May 12, 2011 11:03 AM), http://sports.yahoo.com/mlb/blog/big_league_stew/post/bartolo-colons-stem-cell-treatment-opens-a-new-can-of-worms?urn=mlb,wp6130 (posing question of difference between two methods used by aging athletes to maintain their professional sports careers). See Grush, *supra* note 84 (suggesting surgery that athletes believe will help them throw better is not very different from thinking performance enhancing drugs will make them throw harder). For a discussion of Lance Armstrong's doping, see *infra* notes 142, 154, 167 and accompanying text.

96. See *A Comfortable Victory: Tennis Player Who Had Breast Reduction to Ease Back Pain Enjoys Win in First Round at Wimbledon*, DAILY MAIL (June 22, 2011), <http://www.dailymail.co.uk/news/article-2006063/Simona-Halep-Tennis-player-breast-reduction-enjoys-comfortable-victory-round-Wimbledon.html> (describing Romanian teenager Simona Halep's decision to remove body mass to improve her tennis game).

97. See *id.* (discussing how her "generous curves" hampered her ability to perform and left her ranked 500 internationally after French Open in 2008). Halep stated, "My ability to react quickly was worse and my breasts made me uncomfortable." *Id.* (noting that although her large chest won her many admirers and attention, she viewed her chest's extra weight as hindrance in competition). Halep

niques exists, from Gatorade, to aspirin, to cortisone injections, to laser eye surgery, to Tommy John, and to stem cell procedures like Colon's.⁹⁸ Despite many sports entities' aim to preserve sports in the traditional sense as competition that measures the abilities of athletes, every time a golfer uses surgery to correct his eyesight or a pitcher uses a cadaver to replace his elbow ligament, it reminds us that sports no longer truly represent an entirely "pure and natural competition."⁹⁹

III. UMPIRES STILL TRYING TO FIND THE RULES TO CALL IT FAIR OR FOUL¹⁰⁰

A. The Americans with Disabilities Act Takes a Swing

In the United States, Congress enacted the Americans with Disabilities Act ("ADA") in 1990 in response to a "'compelling need' for a 'clear and comprehensive national mandate' to prevent discrimination against the disabled."¹⁰¹ As disabled athletes attempt

even explained that she would have had the reduction surgery even if she had not been a "sportswoman." *See id.* (expressing Halep's level of discomfort and inconvenience). After the shift from a size 34DD to a "more modest" 34D, Halep climbed in 2011 to be ranked 58th in the world, a substantial leap towards her goal of success in the world of tennis. *See id.* (describing Halep's jump of almost 450 rank spots internationally as well as her post-surgery success at her first-round match at Wimbledon in 2011). A potential debate sparked by Halep's procedure may ask whether breast reduction surgery would align more with LASIK surgery, which many people have merely to improve their quality of life, or whether it would be closer to an elective performance enhancing surgery. *See id.* (noting significance of need to more clearly define parameters of performance enhancement surgery).

98. *See Bryant, supra* note 92 (recognizing difficulty in distinguishing acceptable treatments as methods become more aggressive and experimental).

99. *See id.* (acknowledging use of technology in nearly all aspects of society, not just sports, to aid and perfect human body and correct its imperfections, such as erectile dysfunction, infertility, bad cholesterol, or misshapen noses).

100. *See generally Roberts: 'My Job Is To Call Balls and Strikes and Not to Pitch or Bat', CNN* (Sept. 12, 2005), http://articles.cnn.com/2005-09-12/politics/roberts.statement_1_judicial-role-judges-judicial-oath?_s=PM:POLITICS (presenting Judge John Roberts' opening statement during his nomination hearings for Supreme Court before Senate Judiciary Committee, which invoked baseball analogy). As Judge Roberts stated, "Judges and justices are servants of the law, not the other way around. Judges are like umpires. Umpires don't make the rules; they apply them." *Id.* (expressing connection between judges and umpires because both bear responsibility of fairly applying rules).

101. Kerri Lynn Stone, *The Politics of Deference and Inclusion: Toward A Uniform Framework for the Analysis of "Fundamental Alteration" Under the ADA*, 58 HASTINGS L.J. 1241, 1245-46 (2007) [hereinafter Stone, *Politics of Deference*] (discussing relevance of ADA in fundamental alteration defense); *see also* Mark R. Freitas, Note, *Applying the Rehabilitation Act and the Americans with Disabilities Act to Student-Athletes*, 5 SPORTS LAW. J. 139, 141 (1998) (explaining need for clear mandate of ADA due to inconsistent court decisions under Rehabilitation Act of 1973). The ADA provides two distinct causes of action: Title II and Title III. *See id.* at 141-42 (describing how Title II protects qualified individuals with disability from being excluded, because

to follow in Pistorius's footsteps and gain greater access to athletic competitions, a prosthetic-enabled athlete in a similar situation to Pistorius would likely pursue a claim of discrimination under the ADA if a ban on prosthetics were enacted in the United States.¹⁰² In determining and defining a disability under the ADA, courts must consider the meanings of a "major life activity" and a "substantial limitation" as well as who counts as a "qualified individual."¹⁰³ The statute was intended to create a system in which disabled persons have a greater chance at success by being placed at the same

of disabilities, from participating in or receiving benefits of "services, programs, or activities of a public entity, or be subjected to discrimination by any such entity," and how Title III prohibits discrimination on basis of disability in "full and equal employment of goods, services, facilities, privileges, advantages, or accommodations of any place of public accommodations by any person who owns, leases (or leases to), or operates a place of public accommodation"). In order to bring a Title II claim under the ADA, the plaintiff must prove: "(1) the [defendant] is a 'public entity,' (2) he is a 'qualified individual with a disability,' and (3) he has been excluded from participation from or denied the benefits of the activities of the public entity." *Id.* (quoting *Johnson v. Fla. High Sch. Activities Ass'n, Inc.*, 899 F. Supp. 579, 582 (M.D. Fla. 1995)). In order to bring a Title III claim under the ADA, the plaintiffs must prove: "(1) they are disabled, (2) the [defendant] is a 'private entity' which operates a 'place of public accommodation,' and (3) they were denied the opportunity to 'participate in or benefit from services or accommodations on the basis of his disability.'" *Id.* at 142 (quoting *Johnson*, 899 F. Supp. at 582). Titles II and III may be considered to be the sections of the ADA that are the most relevant to sports and, in particular, to any potential ban on prosthetics in sports. *See* Bidlack, *supra* note 8, at 623 (indicating specifically Title III as likely to have most direct impact on analysis of prosthetics ban).

102. *See* Bidlack, *supra* note 8, at 635 (noting potential future case dealing with prosthetics ban will likely be considered under ADA, thereby demanding analysis of whether allowing prosthetics is reasonable accommodation that does not fundamentally alter sport); *see also* Alexandra Topping, *Paralympics 2012: Roars for Oscar Pistorius's Perfect Sporting Finale*, THE GUARDIAN (Sept. 9, 2012), <http://www.guardian.co.uk/sport/blog/2012/sep/09/paralympics-2012-oscar-pistorius-perfect-finale?newsfeed=true> (suggesting more of Pistorius' titles will disappear at 2016 Paralympics in Rio as more disabled athletes come to compete against athlete who "changed the face of disabled sport").

103. *See* Freitas, *supra* note 101, at 143-57 (discussing requirements to qualify for protection under ADA). The Rehabilitation Act defines an individual with a disability as one who "(i) has a physical or mental impairment which substantially limits one or more of such person's major life activities, (ii) has a record of such an impairment, or (iii) is regarded as having such an impairment." *Id.* (quoting 29 U.S.C. § 706(8)(B) (2006)). Consistent with the Rehabilitation Act, "the ADA defines a 'qualified individual with a disability' as: an individual with a disability who, with or without reasonable modifications to rules, policies, or practices, the removal of architectural communication, or transportation barriers, or the provision of auxiliary aids and services, meets the essential eligibility requirements for the receipt of services or the participation in programs or activities provided by a public entity." *Id.* at 152 (quoting 42 U.S.C. § 12131(2) (2006)). The ADA defines a "major life activity" as a basic life function, "such as caring for one's self, performing manual tasks, walking, seeing, hearing, speaking, breathing, learning, and working." *Id.* (quoting 34 C.F.R. §104.3(j)(2)(ii) (1996) and 45 C.F.R. § 84.3(j)(2)(ii) (1995)).

“starting point as able-bodied people.”¹⁰⁴ Title III of the ADA is likely to be the most useful in an analysis of bans on prosthetics in sports because it prohibits discrimination in public facilities.¹⁰⁵ Within the context of public accommodations, the ADA mandates reasonable accommodations for both observers and participants.¹⁰⁶ However, if a public entity can meet the ADA’s burden of proof by demonstrating that a modification fundamentally alters the essential nature of a sport, the entity may be excused from making the modification, even if such modification is reasonable.¹⁰⁷

In *PGA Tour, Inc. v. Martin*, the Supreme Court granted certiorari to address the tension between fundamental alterations and ac-

104. See Bidlack, *supra* note 8, at 622 (discussing hope for ADA to give disabled persons “equal chance at success in American society”); *PGA Tour, Inc. v. Martin*, 532 U.S. 661, 674-75 (2001) (describing Congress’ intention for ADA to dispel discrimination against those with disabilities). In particular, Congress recognized that “historically, society has tended to isolate and segregate individuals with disabilities, and, despite some improvements, such forms of discrimination against individuals with disabilities continue to be a serious and pervasive social problem.” *Id.* (quoting 42 U.S.C. § 12101(a)(2) (2006)).

105. See *id.* at 623 (explaining that although all three titles of ADA can be relevant to sports, Title III has been used most consistently by courts in considering questions of sports and discrimination because its vast coverage makes it best choice for creating consistent body of law for sports). For instance, Title III covers most sporting situation and extends to professional associations, such as the National Basketball Association (“NBA”), the National Football League (“NFL”), and MLB, as well as state-run colleges, universities, and elementary and secondary schools. See Donald H. Stone, *The Game of Pleasant Diversion: Can We Level the Playing Field for the Disabled Athlete and Maintain the National Pastime, in the Aftermath of PGA Tour, Inc. v. Martin: An Empirical Study of the Disabled Athlete*, 79 ST. JOHN’S L. REV. 377, 381 (2005) [hereinafter Stone, *Game of Pleasant Diversion*] (describing coverage under Title I of employers with fifteen or more employees as well as under Title II of state and local government).

106. See Bidlack, *supra* note 8, at 623-24 (noting courts’ broad interpretations of public accommodation and public facilities to include facilities that house sporting events). Owners and operators of such public facilities must “make reasonable modifications in policies, practices, or procedures, when such modifications are necessary to afford such goods, services, facilities, privileges, advantages, or accommodations to individuals with disabilities.” *Id.* at 624 (quoting 42 U.S.C. § 12182(b)(2)(A)(ii) (2006)). The Americans with Disabilities: Practice and Compliance Manual (“Manual”) offers guidance on determining what qualifies as a reasonable modification. See *id.* (explaining Manual’s instruction to consider reasonable modification according to substantial inquiry based on several useful factors: “(1) the effectiveness of the modification in light of the nature of the disability in question; (2) the cost to the organization that would implement the modification; and (3) whether the modification would do violence to the purposes underlying the rule”).

107. See Bidlack, *supra* note 8, at 624 (describing means of opting out of modification requirement). The ADA’s supplemental materials attempt to provide some clarity by defining “fundamental alteration” as “a modification that is so significant that it alters the essential nature of the goods, services, facilities, privileges, advantages, or accommodations offered.” See *id.* (noting difficulty in establishing concrete definition of “fundamental alteration”).

commodations for disabled persons in athletic competitions under the instruction of the ADA.¹⁰⁸ The PGA Tour argued that the requested modification by golfer Casey Martin to use a golf cart to complete his round of golf might result in a fundamental alteration of the game because: “(1) an essential element of the game would be changed, even if it applied uniformly to all competitors, and (2) a disabled participant would be given a substantial, individual advantage over the rest of the field.”¹⁰⁹ In response, Martin argued that because he qualified for Title III protection under the ADA, the PGA Tour was prohibited from “denying [him] equal access to its tours on the basis of his disability.”¹¹⁰ The Supreme Court con-

108. See *PGA Tour, Inc. v. Martin*, 532 U.S. 661, 668 (2001) (considering how to analyze and decide upon disabled athlete’s accommodation request); see also James P. Looby, *Reasonable Accommodations for High School Athletes with Disabilities: Preserving Sports While Providing Access for All*, 19 *SPORTS LAW. J.* 227, 245 (2012) (recognizing disability issues arising in sports). Casey Martin qualified as an individual with a disability under the ADA because of his affliction with Klippe-Trenaunay-Weber Syndrome, a degenerative and progressive disease that obstructs the flow of blood from his right leg back to his heart and causes severe pain, fatigue, and anxiety. See *Martin*, 532 U.S. at 668 (detailing nature of Martin’s disease that prevented him from being able to walk an 18-hole golf course during latter part of his college career as golfer). The “Conditions of Competition and Local Rules,” also known as the “hard card” of the PGA Tour, permitted Martin as a professional golfer to use a golf cart during the first two stages of the PGA Tour’s Q-School. See *id.* at 667-69 (noting PGA Tour “hard cards” mandate that players “walk the golf course during tournaments, but not during open qualifying rounds”). It is interesting to note that for the Senior PGA Tour, restricted to golfers age 50 and older, competitors may use golf carts although most in fact prefer to walk. See *id.* at 667 (recognizing some adjustments that have been made to golf cart rule to accommodate older golfers). When Martin requested to use a golf cart during the final stage, the PGA Tour refused to waive its walking rule, despite the fact that Martin provided detailed medical records supporting his need for golf cart use. See *id.* at 669 (describing Martin’s motivation for filing action).

109. See Looby, *supra* note 108, at 246 (explaining PGA Tour’s reasoning behind disallowing golf cart use); *Martin*, 532 U.S. at 670 (describing petitioner’s assertion that walking itself is “substantive rule of competition,” and to waive it “would fundamentally alter the nature of the competition”). Petitioner tried to distinguish golf, as it is generally and leisurely played, from golf at the “highest level” by asserting, “[t]he goal of the highest-level competitive athletics is to assess and compare the performance of different competitors, a task that is meaningful only if the competitors are subject to identical substantive rules.” See *id.* at 686 (explaining petitioner’s reasoning that rule requiring walking golf course is such “outcome-affecting” rule that would “fundamentally alter the nature” of professional golf competition).

110. See *id.* at 677 (reasoning that because golf tournaments occur on places of public accommodation, PGA Tour cannot discriminate against individuals in “full and equal enjoyment of the goods, services, facilities, privileges, advantages, or accommodations of those courses”). The ADA requires evaluation on an individual basis of a disabled person’s needs. See *id.* at 680 (noting adherence by Court to principles and rules of ADA in allowing disabled person to “qualify for, and compete in” athletic events available to members of public with skill and desire to compete). The Court pointed out that Martin’s claim was specific to him because the requested accommodation of the golf cart in his case was necessary, not just

sidered the crucial question of whether “allowing Martin to use a golf cart, despite the walking requirement . . . is a modification that would ‘fundamentally alter the nature’” of the PGA Tour.¹¹¹ The Court concluded that the accommodation of the golf cart was a reasonably necessary modification that would not fundamentally alter the competition.¹¹² Voicing his apprehension towards the majority’s decision to permit “‘modifications [that] would fundamentally alter the nature’ of the goods, services, and privileges,” Justice Scalia reasoned in his dissent that the ADA only mandates that access be given to individuals with disabilities.¹¹³ Despite Justice Scalia’s qualms, the majority ultimately held that the PGA Tour

reasonable. *See id.* at 682 (distinguishing players with less serious afflictions than Martin who may not require same level of accommodation).

111. *Id.* (describing Court’s analysis of narrow dispute regarding modification). The Court investigated the changes over the years of golf players’ equipment, design of physical golf courses, the Rules of Golf, and the methods for transporting clubs from hole to hole. *See id.* at 684 (noting evolution in golf of use of golf bags, caddies, hand-pulled carts, and finally motorized carts for transporting both players and clubs). Finding nothing in the Rules of Golf forbidding or penalizing players for using carts, the Court concluded that the walking rule, although included in petitioner’s hard cards, “is not an essential attribute of the game itself.” *See id.* at 685 (determining “optional condition buried in an appendix to the Rules of Golf” does not constitute essential element of game).

112. *See id.* (affirming judgment of Court of Appeals that “[a]ll that the cart does is permit Martin access to a type of competition in which he otherwise could not engage because of his disability”). The Court considered two different ways by which the modification in question could result in a fundamental alteration of the golf tournaments, and found that a waiver of the walking rule would not alter the game “in either sense.” *See id.* at 682 (detailing one option in which modification would “alter such an essential aspect of the game of golf that it would be unacceptable even if it affected all competitors equally,” such as “changing the diameter of the hole from three to six inches,” and another option in which disabled player is given, “in addition to access to the competition as required by Title III, an advantage over others”). Additionally, the Court found that it is impossible in golf to ensure that the conditions for competition among all individual athletes will be exactly the same. *See id.* at 686-87 (suggesting weather, lucky bounces, and other uncontrollable variables demonstrate that chance may have bigger role to play in outcome of professional golf competitions than fatigue caused from walking course). The Court also determined that the fatigue caused by walking a 4-day tournament, such as that of the petitioner, would not be enough to have a significant impact on the quality of competition. *See id.* at 687 (crediting expert testimony for demonstrating trivial nature of fatigue from walking five miles of standard golf course).

113. *See id.* at 698 (Scalia, J., dissenting) (quoting § 12182(b)(2)(A)(ii) (2006)); *see also* Looby, *supra* note 108, at 248-50 (discussing Justice Scalia’s dissent). Justice Scalia objected to the Court debating whether walking constitutes a fundamental aspect of golf, and he also disagreed that waiving the walking rule for Martin would not have a substantial effect on the competition. *See Martin*, 532 U.S. at 701 (criticizing majority’s tests of “essentialness” or “fundamentalness”); *see also* Bidlack, *supra* note 8, at 624 (noting Justice Scalia’s argument that “‘not even the Supreme Court of the United States’ can determine which rules of a competitive sport are fundamental when the governing body of the sport contends that they are”); *see also* Stone, *Game of Pleasant Diversion*, *supra* note 105, at 385 (questioning

erred in refusing to grant Martin's requested accommodation in light of his disability.¹¹⁴

Martin's resulting influence is that "blanket prohibitions regarding an accommodation are forbidden," and consequently, courts must consider the particular circumstances of each case in order to determine whether a proposed or practiced accommodation by an organization is reasonable.¹¹⁵ A month after the Supreme Court decided *Martin*, the Eastern District of Pennsylvania followed its guidance in *Cruz v. Pennsylvania Interscholastic Athletic Association* by approving the waiver of a high school athletic association's maximum age rule for eligibility in interscholastic sports for a nineteen year-old learning-special education student.¹¹⁶ After conducting an individualized inquiry into whether the student, Luis Cruz, had a competitive advantage over other student athletes because of his older age, the court determined, based on a fact-based individualized inquiry, that Cruz did not have such an advantage, did not pose any safety risks, and did not unfairly replace other eligible players.¹¹⁷

whether reasonable accommodations will require modification of baseball to allow four strikes to accommodate for disabled athletes).

114. See Looby, *supra* note 108, at 248 (describing Court's determination that Martin's request was reasonable and that permitting him to use golf cart to participate in tournament would neither "fundamentally alter the playing field or provide him with an unfair competitive advantage").

115. See *id.* at 229 (emphasizing importance of *Martin* decision on future of accommodation for disability in sports cases). In his dissent, Scalia draws attention to the potential for numerous cases and litigation on this topic "if individual organizations are required to analyze the effects of each accommodation in every situation." See *id.* at 249 (noting that as such consideration is not even authorized by ADA, courts should not deal with such inquiries). However, the *Martin* majority decided that assessing individual requests does not impose an undue burden on athletic organizations. See *id.* (supporting determining necessity of individual inquiry into requests for accommodation); see also *Martin*, 532 U.S. at 691 (highlighting Court's recommendation for entities, such as PGA, to "carefully weigh the purpose, as well as the letter, of the rule before determining that no accommodation would be tolerable").

116. See *Cruz ex rel. Cruz v. Pa. Interscholastic Athletic Ass'n, Inc.*, 157 F. Supp. 2d 485, 498 (2001) (explaining district court's wait for Supreme Court's decision in *PGA Tour, Inc. v. Martin* before making its own decision); see also Stone, *Game of Pleasant Diversion*, *supra* note 105, at 392 (highlighting case following *Martin* addressing idea of making individualized inquiry in determining reasonableness of requested modification, specifically with regards to age eligibility rule).

117. See Stone, *Game of Pleasant Diversion*, *supra* note 105, at 393 (supporting court's decision to grant individual waiver of age rule). The court affirmed that the "basic requirement of the ADA is the evaluation of a disabled person on an individual basis" and further articulated that it is the best way to balance fairness in athletic competitions and including disabled athletes in sports. See *id.* (quoting *Cruz*, 157 F. Supp. 2d at 498) (describing "cornerstone of the ADA" as reflecting "notion that a requested modification to the game is reasonable when it is neces-

While the *Martin* decision sheds some light on the evaluation of reasonable accommodation for disabled athletes, it is not entirely comprehensive.¹¹⁸ Therefore, problems continue to arise due to a lack of clear guidance.¹¹⁹ For instance, high school athletic associations may not have sufficient direction from the judiciary to adequately assess whether an “athlete’s requested accommodation is reasonable, when it results in [a] fundamental alteration of the sport.”¹²⁰ Several post-*Martin* cases analyzed the accommodation requests of high school students over the age of eighteen to waive the age limit eligibility requirement with varying results.¹²¹ Additionally, high school wheelchair athletes forced courts to consider whether they should be allowed to compete in normal high school track meets.¹²² Ultimately, in such recent cases, courts appear to be

sary for the disabled athlete to fairly compensate and the modification does not fundamentally alter the nature of the competition at hand”).

118. See Stone, *Politics of Deference*, *supra* note 101, at 1245 (noting lack of clear guidance by Supreme Court in *Martin*).

119. See *id.* (explaining some courts’ struggle to balance accommodation and fundamental alteration). Two questions courts must ask are whether the requested accommodation defeats a fundamental feature or rule of the sport, and, if not, whether permitting the accommodation will give the requesting athlete an unfair competitive advantage. See Looby, *supra* note 108, at 250 (detailing “competitive advantage” analysis courts implemented after *Martin* decision). Additionally, it is important to note that *Martin* is the only case by the Supreme Court that has addressed the issue of reasonable accommodation within the context of athletic events and competition. See *id.* (recognizing illustrative nature of *Martin* decision but also potential for limited guidance).

120. See Looby, *supra* note 108, at 230 (describing remaining question of how courts should and will apply *Martin* reasoning to future high school sports). A court following the *Martin* framework would find that “high school athletic associations should allow wheelchair athletes to compete in a separate race during high school track meets.” See *id.* at 272 (raising possible interpretation under *Martin*).

121. See *id.* at 251 (noting several cases evaluating accommodation requests according to *Martin* in context of intellectually disabled students who do not meet high school age limit eligibility requirements); see, e.g., *Baisden v. W. Va. Secondary Schs. Activities Comm’n*, 568 S.E.2d 32, 44 (W. Va. 2002) (holding waiver of age limit must be weighed against factors such as age, athletic experience, risk of harm due to size, strength, or speed, and nature of sport); *Cruz*, 157 F. Supp. 2d at 485, 499 (holding waiver of age limit eligibility requirement was reasonable modification). The court in *Baisden* justified its decision by pointing out the safety of smaller, younger, and more inexperienced students would have been compromised if Baisden was allowed to participate. See Looby, *supra* note 108, at 252 (explaining court’s ruling in *Baisden* based on analysis of fundamental alteration of game). For a discussion of *Cruz*, see *supra* notes 116-117 and accompanying text.

122. See Looby, *supra* note 108, at 257 (discussing new challenges presented by high school wheelchair athletes after *Martin* and highlighting two particular cases); see, e.g., *Badgett v. Ala. High Sch. Athletic Ass’n*, No. 2:07-CV-00572-KOB, 2007 U.S. Dist. LEXIS 36014, at *17 (N.D. Ala. May 3, 2007) (rejecting plaintiff’s requests to compete directly against able-bodied athletes in track events as well as for any points earned to be added to high school team’s total point value). Although the plaintiff Badgett expressed her desire to compete as part of her team against able-bodied runners, the district court held that her request was unreason-

managing to properly apply the *Martin* framework by conducting individualized inquiries when considering the reasonableness of disabled athletes' accommodation requests.¹²³

While a superficial reading of *Martin* would seem to enable prosthetic-using athletes to participate in sports, the ADA may, in actuality, not be as helpful in revoking a potential ban on prosthetics.¹²⁴ Amputees undoubtedly qualify under the ADA as a disabled class, meaning future courts will have to consider whether prosthetics themselves fundamentally alter sports.¹²⁵ The first step in analyzing a potential prosthetics ban under the ADA is to determine

able based on concerns for competition, fairness, and safety issues. See Looby, *supra* note 108, at 259 (noting potential bumping from wheelchair that could injure athletes, as well as unreasonableness of requiring Alabama High School Athletic Association ("AHSAA") to conduct individual evaluations of every wheelchair athlete's ability to race safely against non-wheelchair competitors). The court also found her request for her points scored to count unreasonable because there were no other schools in the entire state that could provide a wheelchair athlete for her to compete against. See *id.* (finding her proposal "patently unfair" to competing schools without wheelchair athlete); see also *McFadden v. Grasmick*, 485 F. Supp. 2d 642, 650-51 (D. Md. 2007) (following *Badgett* reasoning and rejecting plaintiff's request to earn points for her team when competing in wheelchair races). The court found the plaintiff Grasmick's request unreasonable because she was, in effect, asking to be treated the same as able-bodied competitors in earning points but also to be treated differently by having her own separate wheelchair event. See Looby, *supra* note 108, at 261 (describing court's determination that such request would be unfair to majority of teams without wheelchair racers).

123. See Looby, *supra* note 108, at 270 (describing multiple courts' analyses based on *Martin*). In attempting to provide disabled high school athletes "equal access to sports in the form of a reasonable accommodation," courts have considered: "(1) whether the purposes for the given rule are undermined by granting the request, (2) the age and circumstances of the particular athlete with respect to the sport and his competitors, (3) whether the request involves a fundamental or essential element of the sport, (4) whether granting the request would impose an undue burden on the high school athletic association, and (5) whether the athlete will still have access to the sport if the request is denied." *Id.* at 271 (demonstrating courts' attempts to follow intent of Congress as established in ADA and developed by *Martin*).

124. See Bidlack, *supra* note 8, at 614 (arguing ADA will likely support prohibition of prosthetics in sports because they will fundamentally alter nature of many sports); see also *PGA Tour, Inc. v. Martin*, 532 U.S. 661, 689 (2001) (discussing criteria for fundamental alteration of game). The Court stated, "[T]he waiver of an essential rule of competition for anyone would fundamentally alter the nature of petitioner's tournaments." *Id.* (demonstrating how "peripheral" rules, such as walking rule in *Martin*, do not affect nature of athletic events, and thus may be waived in certain cases without imposing fundamental alteration). Although neither statutes nor cases have provided a rule that will directly address prosthetics as an accommodation for disabled athletes in sports, the Court's decision in *Martin* to apply Title III to sports cases indicates the ADA will likely be the law applied to a potential case regarding a ban on prosthetics. See Bidlack, *supra* note 8, at 629-30 (arguing enough law surrounding ADA exists to make predictions as to how prosthetics ban may be handled in future).

125. See Freitas, *supra* note 101, at 143 (explaining ADA's definition of "disability"). For a discussion of ADA disability requirements, see *supra* note 103 and

whether the athlete has met his or her burden of proof of demonstrating that a reasonable modification is feasible to allow him or her to participate in the sport.¹²⁶ Amputee athletes should not struggle to meet this requirement because allowing an athlete to use prosthetic limbs does not require any action or additional costs by a sports entity.¹²⁷ The second step requires the defendant sports entity to prove that allowing such a reasonable accommodation would fundamentally alter the sport it facilitates.¹²⁸ There is no absolute quantifiable way of measuring what is a fundamental aspect of a sport, and thus the determination of what constitutes a fundamental alteration in each case will depend on the subjective judgments of judges and juries.¹²⁹

The Supreme Court of Massachusetts' decision in *Kuketz v. Petronelli* has the potential to substantially impact the debate regarding whether prosthetics create a fundamental alteration to

accompanying text; see also Bidlack, *supra* note 8, at 631 (pointing to issues for courts to face when sports entities prohibit use of prosthetics in competition).

126. See Bidlack, *supra* note 8, at 625-29 (suggesting guidance on placement of burden of proof may be drawn from another Title III case). Although it did not specifically deal with sports under Title III, the Fifth Circuit in *Johnson v. Gambrinus Co./Spoetzl Bakery* developed a two-step process for analyzing the burden of proof when considering an accommodation for a disability. See *Johnson v. Gambrinus Co./Spoetzl Bakery*, 116 F.3d 1052, 1059 (5th Cir. 1997) (addressing issue of access to brewery by disabled person using guide dog); Bidlack, *supra* note 8, at 625 (describing first step, in which plaintiff must show reasonable accommodations were available, and second step, in which defendant must show such accommodations fundamentally altered defendant's practice). Courts dealing with sports related cases under Title III of the ADA have generally chosen to follow the two-step process outlined in *Johnson*. See *id.* at 626 (suggesting such analysis will continue).

127. See Bidlack, *supra* note 8, at 630 (referring to suggested Manual factors in order to show accommodation is reasonable). In the sense that prosthetics generally do not require any action on the parts of sports entities because athletes provide their own, prosthetics may be considered to be "reasonable modifications," similarly to the golf cart in *Martin* and the second bounce in *Kuketz*. See *id.* (distinguishing use of prosthetics as accommodation to requested modification in *Badgett*, in which court found accommodation unreasonable because of infeasibility and impracticality). Unlike the plaintiff's request in *Badgett*, prosthetic-using athletes are generally not asking for the creation of an entirely new and separate class of sporting events. For a discussion of facts and holding of *Badgett*, see *supra* note 122 and accompanying text.

128. See Bidlack, *supra* note 8, at 631 (highlighting issue as key in any potential case dealing with prosthetics ban).

129. See *id.* at 632 (discussing inherent judgment that will be required in new analyses of every sport because of each sport's different sets of rules and requirements). One model definition of a fundamental alteration that has been suggested is "an alteration to a sport or game to facilitate the participation of a disabled person is a fundamental alteration if the requested change damages the underlying nature of the game or turns the game into an entirely new game." *Id.* (acknowledging use of model in extremely subjective analysis can help increase consistency in similar cases).

sports.¹³⁰ In *Kuketz*, the court determined that allowing two bounces for a wheelchair racquetball player was in fact a fundamental alteration of the game, even though it was a reasonable modification.¹³¹ Prosthetics, like a wheelchair, are incorporated by users into their actual efforts to play the sport, which may lead courts to find prosthetic accommodations more comparable to a second bounce in racquetball than to the use of a cart in golf.¹³² Because both a second bounce and a prosthetic limb can be viewed as introducing something entirely new to a sport, they arguably alter the game in a fundamental way.¹³³ As such, a prosthetics ban may be upheld in the United States despite the protections offered by the ADA for disabled athletes.¹³⁴

An amputee athlete, like Scout Bassett, seeking assistance from the ADA to compete using her prosthetic may find herself frustrated by the ADA's limitations; unfortunately, her disappointment

130. See *id.* at 633 (recognizing similarities between fact patterns of *Kuketz* and potential case involving prosthetics); *Kuketz v. Petronelli*, 821 N.E.2d 473, 479 (Mass. 2005) (holding allowing two bounces for wheelchair athletes constitutes variation of official rules that would "alter such an essential aspect of the game").

131. See Bidlack, *supra* note 8, at 628 (describing court's holding based on belief that second bounce is directly contrary to rules because it changed racquetball to "a new game, with new strategies and new rules"). The court upheld the racquetball club's ban on two bounces because to allow such a modification would have violated a key component of the game of racquetball. See *id.* at 633 (comparing *Kuketz* to *Martin* and recognizing opposite ends of spectrum of fundamental alteration said cases represent). The similarity between the requested racquetball modification and an athlete using prosthetics is that both situations require the accommodations to occur as part of the game being played. See *id.* at 634 (explaining that permitting second bounce and athlete to use prosthetic limbs occur with movement, skills, and techniques of sport). The court did not directly address the racquetball club's argument that its rule not to permit two bounces was a safety concern for other athletes who would be unfamiliar and unprepared to compete against wheelchair athletes. See *id.* (recognizing different movements and equipment that would be incorporated into game were two bounces, and therefore wheelchair athletes, permitted).

132. See *id.* (aligning potential future prosthetic case with *Kuketz* over *Martin*).

133. See *id.* at 633-34 (supporting position that future cases concerning prosthetics in sport will follow *Kuketz* analysis and holding because introduction of mechanical components to sports, such as prosthetic limbs, changes game and even may provide unfair advantage to disabled athletes).

134. See *id.* at 635 (arguing prosthetics result in fundamental change to actual sports, particularly in track, thereby allowing sports entity to opt out of ADA requirements for reasonable modifications for disabled persons). In addition, the debate surrounding the suggested mechanical advantage of using prosthetics has not yet been concluded. See *id.* at 635-36 (noting inevitability of further testing similar to that conducted on Pistorius and his Cheetah legs). If new test results show that prosthetics do in fact confer a mechanical advantage, American courts will be hesitant to allow accommodations that arguably give disabled athletes unfair advantages. See *id.* at 636 (recognizing additional issue of potential growth in mechanical advantage as technology develops).

may not end there.¹³⁵ Although the CAS ensured Oscar Pistorius' eligibility to compete with his current prosthetic limbs, the CAS may not actually offer as much assistance to disabled athletes as it would seem from the Pistorius story.¹³⁶ The hope one looks to find in the CAS' ruling on Pistorius may be even more misleading for American amputee athletes because the CAS case evaluated the facts under completely different standards than a court following the ADA would consider.¹³⁷ Due to the distinct dissimilarities between the standards of the CAS and the ADA, an American court would not be able use the CAS' Pistorius decision as a model if faced with a similar situation.¹³⁸ The CAS ruling may be further restrictive because it was specifically limited to apply only to Pistorius and not to other athletes seeking the same accommodation.¹³⁹ Moreover, no current law exists that will likely ensure the eligibility of such athletes to compete against able-bodied athletes on the same track.¹⁴⁰ Thus, while the CAS ruling may at first glance seem to fill in the gaps in the protections offered by the ADA, in reality amputee athletes may find little recourse from it.¹⁴¹

135. *See id.* at 634 (noting CAS decision as potentially helpful to analysis of protective legislation for disabled athletes in case where ADA cannot ensure disabled athletes legal protection to participate in sports).

136. *See id.* (stating CAS should not be seen as determinative of case by American athlete similar to Pistorius).

137. *See id.* (explaining different systems of analysis by CAS and American court in considering admissibility of prosthetics in sport). The CAS case required the IAAF to meet its burden of showing that Pistorius had a competitive advantage while running due to his prosthetic legs. *See id.* (acknowledging CAS' evaluation based on "quantifiable mechanical advantage"). A future American court, on the other hand, would consider the facts of such a case according to the ADA's fundamental alteration standard. *See id.* (comparing American court's analysis based on "subjective fundamental alteration standard").

138. *See id.* (discounting direct comparison with CAS as appropriate avenue of analysis for American court).

139. *See id.* (suggesting limitations in CAS holding demonstrate unwillingness to act affirmatively to prevent bans on use of prosthetics in sports). For a discussion of the limited nature of CAS ruling, see *supra* notes 56-58 and accompanying text.

140. *See* Bidlack, *supra* note 8, at 634 (describing need to find place for use of prosthetics in sports on spectrum of fundamental change between *Martin* and *Kuketz*).

141. *See* Patricia J. Zettler, *Is It Cheating to Use Cheetahs?: The Implications of Technologically Innovative Prostheses for Sports Values and Rules*, 27 B.U. INT'L L.J. 367, 408 (2009) (recognizing failure by CAS to develop and establish "general policy for determining the permissibility of future versions of prostheses").

B. Whether Tiger Woods' Corrective Eye Surgery Is Equivalent to Lance Armstrong's Doping

A comparison is frequently drawn between athletes using performance enhancement surgery, such as Tiger Woods undergoing LASIK, and athletes using performance enhancing substances, such as Lance Armstrong using steroids and blood doping.¹⁴² Succinctly, “[i]f laser eye surgery [and other surgeries] can enhance performance should [they] not also be considered ‘cheating’?”¹⁴³ In both cases, athletes do whatever it takes to achieve a competitive advantage in their respective sports.¹⁴⁴ Many perfectly healthy athletes, who are still unsatisfied with their natural athletic abilities, turn to performance-enhancing drugs in order to become the best in their sport.¹⁴⁵ These athletes tamper with their bodies through a variety of methods, such as exercising, dieting, removing head and body hair, and receiving special medical treatments for recovery, in order to push themselves and their bodies to their athletic limits.¹⁴⁶ However, a distinction should be recognized between a football

142. See Grush, *supra* note 84 (offering similarity between elective surgery and performance enhancing drugs in that people believe both “can make you throw harder”); see also Terry Newell, *Lance Armstrong and the Future of Performance Enhancement*, THE HUFFINGTON POST (Aug. 31, 2012, 11:39 AM), http://www.huffingtonpost.com/terry-newell/lance-armstrong_b_1832707.html (describing Lance Armstrong's loss of cycling titles by United States Anti-Doping Agency for impermissible drug use while competing in seven Tour de France events). For a discussion of Tiger Woods' LASIK eye surgery, see *supra* notes 77 and 79, and *infra* note 150 and accompanying text.

143. *Laser Eyed Athletes*, *supra* note 74 (comparing athletes who are regularly tested and face punishment for using performance enhancing drugs to athletes using laser eye surgery).

144. See Jacques, *supra* note 14, at 118 (discussing how young athletes who “want to ‘play at the professional level or dominate at the current level . . . “ will use steroids even if their sports idols do not).

145. See Maureen A. Weston, *The Intersection of Sports and Disability: Analyzing Reasonable Accommodations For Athletes with Disabilities*, 50 ST. LOUIS U. L.J. 137, 162 (2005) (highlighting use of performance enhancing drugs to make distinction between non-disabled athletes and disabled athletes, stating disabled athletes may be “more worthy of participation” because they have worked as hard as non-disabled athletes to improve their athletic skills in face of challenging physical, and sometimes mental, obstacles). An unfair situation may arise when disabled athletes who have striven to succeed in their respective sports are “denied the opportunity to participate because of a disability, medical impairment, or need for accommodation in either the rules of play or participation.” *Id.* (noting importance of *Martin* in providing athletes with “vital mechanism” to protect their right to participate in athletics).

146. See *Performance Enhancing Behaviour: Body Modification*, BBC, http://www.bbc.co.uk/ethics/sport/debate/drawingline_1.shtml (last visited Oct. 27, 2012) [hereinafter *Performance Enhancing Behaviour*] (listing several examples of ways in which athletes “tamper” with their bodies); see also Jacques, *supra* note 14, at 97 (describing practices of ancient civilizations, such as Aztecs and Ancient Greeks, of using substances for competitive advantage).

player using an inhaler to control his asthma and a sprinter taking a muscle-building steroid.¹⁴⁷

Methods that are performance enabling as opposed to performance enhancing appear philosophically distinct; however, the techniques and procedures athletes use for these purposes may not be so easy to separate and define.¹⁴⁸ For instance, some surgeries performed to correct weaknesses that existed at birth, such as nose surgery to improve breathing, are not considered “corrective beyond the norm.”¹⁴⁹ When such corrective surgeries, like LASIK, have the potential to result in enhanced capabilities beyond normal limits, the chance of leaving a surgically enhanced athlete with a competitive advantage, such as 20/15 vision in Tiger Woods’s case, draws concerns.¹⁵⁰ Without much critical thought or effort given to establishing policies in professional sports, allowing enhancement surgery for non-therapeutic purposes may lead to vision improvements up to 20/10, surgically enhanced golf swings, and even brain implants that help speed up brain processes.¹⁵¹ Similar to doping, surgeries that extend athletes’ capabilities by external means create an uneven playing ground, and thus, governing organizations must distinguish between what constitutes a permissible therapeutic or

147. See *Performance Enhancing Behaviour*, *supra* note 146 (considering difference between athlete using drugs to be able to compete in spite of pre-existing medical condition and athlete using drugs to get ahead by building more muscle mass more quickly). In fact, the IOC and other similar organizations “single out drugs as qualitatively different from other performance enhancing techniques.” *Id.* (distinguishing illegal doping as its own type of performance enhancement).

148. See Bryant, *supra* note 92 (recognizing likelihood that athletes will experiment with available surgeries for performance enhancement instead of for merely rehabilitative purposes). Such circumstances may be considered analogous to actors who choose to have cosmetic surgery in order to enhance their image instead of doing it because of a medical reason. See *id.* (noting many pitchers who have contacted Leonel Liriano, doctor who performed Colon’s innovative surgery, seek same procedure).

149. See Hamilton, *supra* note 10, at 44-45 (describing nose surgery as permanent form of external adhesive nasal strips that also improves breathing). While the possibility exists for performance enhancement with such surgeries, correcting a birth deficiency seems to be relatively accepted as merely placing athletes on the same level as other athletes who did not need such corrections. See *id.* (suggesting certain surgeries do little more than ensure equal footing for competing athletes).

150. See *id.* at 45 (considering influence of cosmetic surgeries accepted as non-therapeutic on enhancement surgeries among athletes for non-therapeutic means). For instance, after undergoing LASIK surgery, Tiger Woods was able to better see contrasts, judge distances, and recognize putting green layouts. See *Laser Eyed Athletes*, *supra* note 74 (describing various vision improvements for golfers).

151. See Hamilton, *supra* note 10, at 45 (implying Professional Golfers’ Association, although it allows corrective eye surgery with enhancing effects, may not accept golfers’ swings enhanced to increase drive by fifty yards).

enabling practice and what constitutes an impermissible enhancing method.¹⁵²

Doping and the illegal use of drugs for performance have repeatedly been deemed “unhealthy and contrary to the ethics of sport.”¹⁵³ The American government has never prosecuted any U.S. athlete for doping, so potential guidance for the connection between drugs and performance-enhancing surgery will be derived from legislative and regulative materials.¹⁵⁴ In 2005, Congress introduced the Clean Sports Act (“CSA”) with the purpose of protecting “the integrity of professional sports and the health and safety of athletes generally by establishing minimum standards for the testing of steroids and other performance-enhancing substances by professional sports leagues.”¹⁵⁵ Although the CSA was never en-

152. *See id.* (quoting Andy Miah’s position that, “[w]hen a modification places an athlete over and above their natural level of functioning or some species-typical level of functioning, this constitutes doping and is considered to be unacceptable because it provides an enhancement of the natural”).

153. *See Performance Enhancing Behaviour*, *supra* note 146 (supporting that performance enhancing drugs “should be banned also because anyone using them is trying to gain an unfair advantage over those athletes who wish to maintain normal health”); *see also* David Legg & Daniel S. Mason, *Disability Issues in Sport: Autonomic Dysreflexia in Wheelchair Sport: A New Game in the Legal Arena*, 8 MARQ. SPORTS L.J. 225, 233 (1998) (describing definition of doping by International Paralympic Committee (“IPC”)). “Doping can be defined as the administration or use of any substance foreign to the athlete’s body, or of any physiological substance taken in abnormal quantity or taken by abnormal route of entry into the body with the sole intention of artificially increasing performance in competition.” *Id.* (quoting IPC); *see also* Charlish & Riley, *supra* note 38, at 61 (describing growing prevalence of performance enhancing substances at professional sports level). In the late 1960s, sports organizations and authorities began confronting and combating substance abuse. *See id.* (noting actions taken by Union Cycliste International (“UCI”), Fédération Internationale de Football Association (“FIFA”), and International Olympic Committee (“IOC”) to instate drug tests and create lists of prohibited substances in 1960s and 1970s). Additionally, the Court of Arbitration for Sport (“CAS”) stated, “[f]urthermore, it appears to be a laudable policy objective not to repair an accidental unfairness to the whole body of other competitors. This is what would happen if banned performance enhancing substances were tolerated when absorbed inadvertently. Moreover, it is likely that even intentional abuse would in many cases escape sanction for lack of proof of guilty intent.” *Id.* at 64 (quoting *USA Shooting*, CAS 94/A/129, ¶¶ 14-15).

154. *See* Bonnie D. Ford, *Series of Events Critical to Legacy*, ESPN (June 14, 2012, 2:09 PM), http://espn.go.com/espn/otl/story/_/id/8051461/usada-actions-lance-armstrong-start-series-events-strip-tour-de-france-titles (discussing that U.S. athletes have only been prosecuted for trafficking drugs or for other crimes related to doping but not for doping itself). For instance, the USADA filed charges against Lance Armstrong for financial fraud of diverting U.S. Postal Service sponsorship funds to doping purposes, but the American government did not file charges against Armstrong. *See id.* (noting USADA’s case rested on proving breach of contract).

155. *See* Jacques, *supra* note 14, at 99 (describing CSA as Congress’ “decisive response” to growing phenomenon of professional athletes using illegal performance enhancing substances). The CSA had two primary goals: (1) discourage the

acted, its admirable goal of dealing with illegal performance enhancing substances may be instructive for a potential future bill dealing with other performance enhancing methods.¹⁵⁶ In light of the globalization of doping in sports, international sports organizations, such as the IOC, have worked to develop a strong movement against doping for performance enhancement.¹⁵⁷ The enactment of the World Anti-Doping Code ("Code"), of which the United States is a signatory, signified an important achievement of harmonizing international anti-doping policies, rules, and regulations.¹⁵⁸ As expressed in the Code, "anti-doping programs seek to preserve what is intrinsically valuable about sport [:] . . . the spirit of sport."¹⁵⁹

The Code may be theoretically instructive, but it is not clearly or specifically defined enough to work to control performance enhancement surgeries.¹⁶⁰ According to a comment to the Code, a substance may be included on the Prohibited List if it meets three criteria: "(1) it has the potential to enhance or enhances sport performance; (2) it represents a potential or actual health risk; or (3) it is contrary to the spirit of sport."¹⁶¹ At first glance, it would ap-

use of performance enhancing substances, especially by adolescents, and (2) "restore the integrity of professional sports." *See id.* at 125 (enumerating CSA goals and recognizing goals as admirable).

156. *See* S. 1114, 109th Cong. (2005) (as introduced by S. Comm. on Commerce, Science, & Transp., May 24, 2005) (stating brief legislative history of CSA).

157. *See* Miah, *supra* note 14, at 301 (discussing legislative structures to deal with use of drugs for enhancement). In 1967, the IOC established a Medical Commission, whose primary concern was health risks to doping athletes. *See id.* (recognizing need to rethink approach to doping after death of Tommie Simpson in 1967 Tour de France caused by doping); *see also* Bengt Kayser & Aaron C.T. Smith, *Globalisation of Anti-Doping: The Reverse Side of the Medal*, 337 *BMJ* 85, 85 (July 12, 2008) (describing action taken by IOC in forming World Anti-Doping Agency ("WADA") in order to harmonize anti-doping rules for elite sport through "repressive punitive policies for transgression" and "annually updated list of forbidden substances and methods").

158. *See The Code*, WORLD ANTI-DOPING AGENCY, <http://www.usada.org/resources/wada-code.aspx> (last visited Oct. 26, 2012) [hereinafter *Code*] (describing Code as effective tool in anti-doping efforts worldwide).

159. *See id.* at 14 (describing "essence of Olympism"). The principles behind the Code seek to celebrate the human spirit, body, and mind. *See id.* (listing values of ethics, fair play and honesty, health, excellence in performance, character and education, fun and joy, teamwork, dedication and commitment, respect for rules and laws, respect for self and other participants, courage, community, and solidarity). As doping is considered "fundamentally contrary" to the values that characterize the spirit, it is heavily regulated. *See id.* (requiring "each Anti-Doping Organization to develop and implement educational programs for [a]thletes").

160. *See Taking a Critical Look*, *supra* note 73 (noting difficulty in applying Code).

161. *See id.* (citing comment to Article 4.3.2 of Version 3.0 of World Anti-Doping Code).

pear that a performance enhancing surgery could be considered for inclusion on the Prohibited List under any one of these criterion.¹⁶² However, the use of just one of the three criteria as the sole criterion would make the Code over-inclusive.¹⁶³ In addition, while ensuring fair competition justifies testing for steroids, testing for surgery seems to offer little help to the balancing act that may be required in evaluations of fairness.¹⁶⁴ If testing is not an option, establishing concrete standards and limitations on acceptable surgeries may be the only way to control the potential growth in performance enhancing surgeries.¹⁶⁵

162. For a discussion of the potential for surgery to enhance performance, see *supra* notes 72, 75, 79, 84, and 93 and accompanying text. For a discussion of the potential or actual health risks of surgery, see *supra* notes 78 and 85 and accompanying text. For a discussion of the argument that performance enhancing surgery is contrary to spirit of sport, see *supra* note 20 and accompanying text.

163. See *Taking a Critical Look*, *supra* note 73 (listing examples of permissible activities that demonstrate no criteria by itself is sufficient basis for inclusion of substance on Prohibited List). In the case of the first criteria of potential for enhancement, physical and mental training, red meat, carbohydrate loading, and altitude training could be added to the Prohibited List. See *id.* (explaining issues with focusing solely on first criterion). In addition, a sole focus on the potential or actual health risk would include smoking for its risk of harm and painkillers for their potential health risks. See *id.* (noting remaining lack of clarity by focusing solely on second criterion).

164. See Dante Marazzo, *Athletes and Drug Testing*, 8 MARQ. SPORTS L.J. 75, 79 (2011-12) (discussing “laudable” goals of drug testing). The issue of drug use reaches to intercollegiate athletics, where the NCAA states its reasons for drug testing as: “(1) fair competition; (2) public confidence in the games; (3) high visibility of athletes as role models; and (4) the health and safety of the athletes.” See *id.* (listing policy reasons of NCAA). Although there have been constitutional challenges to the NCAA drug testing program, courts have rejected such challenges and upheld the NCAA’s drug testing program. See *id.* (describing success of NCAA policy through constitutional challenges in judicial system). See, e.g., *Nat’l Collegiate Athletics Ass’n v. Tarkanian*, 488 U.S. 179, 197-99 (1988) (holding NCAA’s conduct in punishing athletes for violating drug policy is viewed as private, not state action); *Hill v. Nat’l Collegiate Athletics Ass’n*, 865 P.2d 633, 637 (Cal. 1994) (upholding NCAA drug testing policies based on its “significant interest” to “protect the athlete’s health and safety”).

165. See Ishan Dasgupta, *Op-Ed: Baseball and Bioethics*, JOHNS HOPKINS BERMAN INST. OF BIOETHICS (June 17, 2011), <http://bioethicsbulletin.org/archive/op-ed-baseball-and-bioethics/> (stating professional sports leagues, particularly Major League Baseball, will have to consider “balance of excellences deemed fundamental to the sport” in order to determine whether such excellences are permissible or not). Although many frame the debate as one requiring a distinction between treatment and enhancement, this itself can be too vague because some surgeries that may be “considered elective in the medical world” are considered “necessary in the baseball world.” See *id.* (suggesting instead debate consider whether excellences of sports, such as speed and strength, are unfairly enhanced by technology). As such, sports entities and authorities must determine standards for excellences; otherwise, arbitrary decisions will be made to ban some forms of enhancement but not others. See *id.* (noting decisions in baseball will ultimately be made based on interests of game as business).

Despite the obvious similarities between drugs and other performance enhancing techniques, the IOC and other organizations have identified drugs as “qualitatively different” from other performance enhancement methods.¹⁶⁶ Lance Armstrong’s alleged decision to intentionally and knowingly use steroids to enhance his performance can clearly be classified as cheating; however, well-accepted surgeries, like Tiger Woods’ LASIK procedure, may teeter on the edge of crossing the line between permissible and impermissible.¹⁶⁷ For instance, the distinction may become less clear when athletes undergo surgery or use substances for reasons that could be deemed separate from their participation in sports.¹⁶⁸ Clarification is needed to determine whether policies enacted to prevent, and in some cases punish, doping for performance enhancement would apply just as easily in the case of performance enhancement surgeries.¹⁶⁹

166. See *Performance Enhancing Behaviour*, *supra* note 146 (recognizing perspective that drugs are different because they pose greater threats to health and safety of athletes who use them). The IOC also seeks to ban such drugs because individuals who use them are “trying to gain an unfair advantage over those athletes who wish to maintain normal health,” which could eventually result in more athletes risking their health to gain a competitive advantage themselves. See *id.* (describing how drugs are considered cheating and detrimental to sports).

167. See Newell, *supra* note 142 (stating use of performance enhancing substances, as in case of Lance Armstrong, cheapens human achievement); see also Hamilton, *supra* note 10, at 40 (describing acceptance of LASIK as permissible surgical procedure for athletes, despite fact that improvement to perfect vision is possible).

168. See Travis Tygart & Anthony R. Ten Haagen, *The Americans with Disabilities Act, the United States Anti-Doping Agency, and the Effort Toward an Equal Opportunity: A Case Study of the United States Anti-Doping Agency v. George Harman Matter*, 2 HARV. J. SPORTS & ENT. L. 199, 200 (2011) (offering example of potential conflict when athlete uses testosterone injections to correct his erectile dysfunction syndrome when such injections may otherwise disqualify him from professional athletic competitions). George Hartman, a U.S. judo athlete, argued that his use of synthetic testosterone was not a violation of sport anti-doping rules under the United States Anti-Doping Agency (“USDA”) because it was protected by the ADA. See *id.* at 201 (illustrating potential involvement of ADA in performance enhancing drug cases); see also *United States Anti-Doping Agency v. George Hartman*, Am. Arbitration Assoc.: N. Am. Court of Arbitration for Sport Panel, AAA 30 190 00900 05, 1 (June 19, 2006) (holding Hartman did not meet his burden of proof of showing he suffered from disability under ADA); Kayser, *supra* note 157, at 86 (discussing barriers to implementation of harm reduction strategies within context of doping). Setting standards and policies to keep performance enhancing techniques out of sports is difficult because people use such methods for a variety of non-sport related purposes, such as “to develop muscularity for aesthetic or occupational reasons, to retard ageing, to combat sexual dysfunction, and to improve cognitive performance.” See Kayser, *supra* note 157, at 86 (recognizing inherent difficulty in distinguishing permissible practices for everyday life but not for sport).

169. See Miah, *supra* note 14, at 302 (noting status of World Anti-Doping Code as current international standard for doping technologies). Three elements for determining whether a technology should be prohibited from sport are the poten-

C. Recommending a Playbook for this Season's Technology

1. *All or Nothing: Terminator Track Stars or a Lockout for the Injured and Disabled*

The future of the technology in sports may actually be the transformation of the Paralympics into a greater spectacle than the Olympic Games, in recognition of not only the strength and perseverance of disabled athletes overcoming their physical limitations, but also of the advancements of technology available to all athletes.¹⁷⁰ Olympic Games expert Andy Miah confidently predicted a “new kind of Olympics” in the next thirty years, in which parathletes and athletes will compete side-by-side “with the integration of biology and technology helping them to lift more, run faster, and really push their bodies to the limit.”¹⁷¹ Athletic com-

tial for the technology to be harmful to an individual's health, the performance enhancing nature, and the potential for it to be contrary to the “spirit of sport.” See *id.* at 302-03 (listing conditions to consider in analysis). However, it is important to note that these conditions are not relevant for all types of enhancement technology, such as a new design element of a tennis racquet. See *id.* at 303 (recognizing how in such circumstance, certain sports federation “will consult its own guidelines on technical specifications to determine whether the innovation is acceptable” instead of applying anti-doping code).

170. See Mitten & Davis, *supra* note 47, at 75-76 (noting forum provided by Olympic Games and Winter Olympic Games for “maximizing unique physical talents and enhancing personal growth as well as for increasing understanding, appreciation, and respect among diverse cultures and societies”); see also Thompson, *supra* note 16 (posing possibility of demand for entirely new Olympics solely for display and demonstration of advancement of performance enhancing technologies). Technology may develop and demand new versions of competition in each sport, such as “power running, and power swimming, and power climbing.” See *id.* (noting potential for “emergence of all kinds of new sports” when technology extends past human limits); see also Hochman, *supra* note 20 (describing how some day Paralympics, currently seen as “second-tier Olympics,” will draw more audiences and publicity for being “the place for sports fans to go watch people really going faster, higher, and stronger”).

171. See Tiplady, *supra* note 15 (quoting Miah's belief in future combined Olympics); see also Thompson, *supra* note 16 (describing possibility of Olympic-sanctioned bionic limb in case where future technology develops prosthetic limb that fully and completely emulates “biological limb function”). “Without any such human-like constraints, the Paralympics limb will become [the basis of] this human-machine sport like racecar driving.” *Id.* (quoting Hugh Herr, biomedical engineer at Massachusetts Institute of Technology (MIT)). See Ryan, *supra* note 1 (concluding that as motorized parts and bionic limbs are currently prohibited from use in Olympics or Paralympics, “cyborg Olympics” may not be too difficult to imagine); see also Simon Darcy, *Beaten By A Length? Pistorius, Oliveira and Paralympic Fairness*, THE CONVERSATION (Sept. 3, 2012), <http://theconversation.edu.au/beaten-by-a-length-pistorius-oliveira-and-paralympic-fairness-9251> (recognizing view that Paralympics will become “an international showcase for the latest breakthroughs in medicine, sport science and sport's equivalent of the technological ‘arms and leg race’”).

petitors will have the ability and the freedom to explore to the greatest extent how far the human body can go with technology.¹⁷²

A sports technology free-for-all may also mean it will become more and more difficult to discern “whether the human athlete or the technology has achieved the performance.”¹⁷³ If technological advancements in sports proceed unchecked and unregulated, there is a substantial possibility that athletics will no longer focus on “ideas of competitive success” and will be “replaced by a focus on maintaining technology in the competitive realm.”¹⁷⁴ Athletes may also shift their surgical requests from merely repairing minor imperfections or injuries to implementing “prosthetic” ligaments or tendons to reduce the amount of time needed for recovery as well as to increase strength.¹⁷⁵ Sports organizations and authoritative bodies may still have a small amount of time to decide how to handle the growing performance enhancement phenomenon before it completely changes human athletic ability.¹⁷⁶

172. See Thompson, *supra* note 16 (recognizing both issues of science and ethics in debate over performance enhancing technology). Some have proposed such surgical enhancements as “skin grafts to increase webbing between fingers and toes to improve swimming capacity.” See *id.* (describing biological “tweaks” that may become more prominent ways for athletes to gain even more of competitive edge).

173. See Miah, *supra* note 14, at 308 (raising issue of athlete’s ability to “claim responsibility” for any of his own personal achievement in a sport when technology is deeply involved in the performance).

174. See Floyd, *supra* note 16, at 176-77 (explaining how increased emphasis on improved sports equipment or technology, such as tennis racquet, implies “racquet technology is a substitute for physical strength”). Neither coaches nor athletes want an “improper focus on an unlimited use of technology” to take over and detract from attention that should be devoted to competition between athletes. See *id.* at 177 (discussing how equipment should not be sports’ central focus). With developing technology driving up the standards for athletic achievement, athletes “will do whatever they can to maintain a competitive edge.” See Del Cid, *supra* note 178, at 178 (describing possible motivations for using performance enhancing technology as gaining competitive edge over opponents, staying at same level as competitors, building team camaraderie, overcoming individual superstitions, or managing “trials and tribulations” of participating in competitive, professional sports).

175. See *Artificial Ligaments*, MEDICAL DISCOVERIES, <http://www.discoveriesinmedicine.com/Apg-Ban/Artificial-Ligaments.html#b> (last visited Oct. 30, 2012) (describing artificial ligament made of Goretex developed by W.L. Gore Company, which attaches to bone “above and below [] knee” by screws and eventually becomes “naturally anchored”).

176. See Thompson, *supra* note 16 (noting how current body modification technology still has room to improve); see also Tiplady, *supra* note 15 (stating prostheses technology still has much to accomplish before it can perfectly imitate human movement). While technology has undoubtedly taken major steps forward in prosthetics, it will still take quite some time before such machinery actually turns “paralympians into superhumans.” See *id.* (acknowledging that technology’s current goal is simply, or not so simply, to emulate human mobility, not to surpass it).

Critics of the integration of technology into sports protest against innovations for causing fundamental alterations to sports, thereby changing sports forever.¹⁷⁷ One harsh approach would completely ban any apparatus, method, or surgery that would qualify as a performance enhancer.¹⁷⁸ In an extreme way, this view asserts that sports ought to be “biological and pure.”¹⁷⁹ This would eliminate an exorbitant number of athletes who use pain medication, have LASIK eye surgery, use eyeglasses or wear contacts, or take insulin for diabetes.¹⁸⁰ Such an aggressively purist view has been seriously criticized as being superficially exclusive in an attempt to maintain the “purity” of sports.¹⁸¹

Although such a purist approach would strive to keep all new technologies from infiltrating the sports world, there are many forms of technological advancements that have helped sports become more efficient and safe.¹⁸² Additionally, health and safety have been, and will continue to be, two of the primary justifications for incorporating technology into sports.¹⁸³ For instance, MLB has

177. See Miah, *supra* note 14, at 307 (describing various ways changes to technology can impact aspects of sport itself, including training conditions and performance of certain required skills). Some examples of such technological changes are “U-groove golf clubs that allowed greater accuracy on stroke,” “superman cycling position that allowed more streamlined position for greater speed,” and “breathable clothing material used to regulate body temperature in extreme climates.” *Id.* (listing several examples of alterations to sports due to changes in technology).

178. See Hector Del Cid, Comment, *Winning at All Costs: Can Major League Baseball's New Drug Policy Deter Kids from Steroids and Maintain the Integrity of the Game?*, 14 SPORTS LAW. J. 169, 194 (2007) (describing possible extreme measure to ensure “clean competition” in sport).

179. See Jason Turbow, *Bigger, Faster, Stronger: Will Bionic Limbs Put the Olympics to Shame?*, WIRED (Aug. 3, 2012, 6:30 AM), <http://www.wired.com/playbook/2012/08/next-gen-prosthetics-and-sports/2/> (posing question to future generation of whether pure notion of sports or “gladiator sport and pharmaceutical freakshow” notion will prevail).

180. See Del Cid, *supra* note 178, at 194 (realizing how much would have to be banned to have truly pure competition).

181. See Charlish & Riley, *supra* note 38, at 955 (arguing notion of “purity” of sports “obscure[s] clearer debates concerning equity, comparability, and sporting ideals”).

182. See Crincoli, *supra* note 18, at 182 (recognizing usefulness of computers, for example, in recording running times in order to judge, officiate, and referee various sporting events). When technology allows for instant replays and precise time recordings, “there is absolutely no one advocating a return to the imperfection of human timing.” See *id.* (supporting argument in favor of incorporating technology into sports, at least to some degree).

183. See Miah, *supra* note 14, at 306 (recognizing instances in which rules regarding technologies for sports changed to “improve safety and reduce the risk of harm”). Some examples include “introduction of plastic helmets in American Football to reduce head injury . . . more sophisticated shoe design for more support to foot during athletic events,” and “spring board surface in diving to prevent

recently begun studying ways to protect pitchers from head injuries by batted balls.¹⁸⁴ Ultimately, eliminating technology entirely from the world of sports is not a reality, but it may be possible to limit its integration.¹⁸⁵

2. *Separate but Equal Wheels Back Into Play*

With the undeniable benefits of athletic participation for students uncontested, greater attention and effort must be given to providing adequate opportunities for inclusion of disabled student athletes.¹⁸⁶ In particular, special attention must be given to students with physical disabilities, who have even fewer opportunities for athletic participation than students with cognitive disabilities.¹⁸⁷ Several states have been proactive about increasing athletic oppor-

slip and increase resiliency of board tips to reduce injury.” *Id.* at 307 (listing several among many modified technical measures in interest of health and safety).

184. See *MLB Looking to Protect Pitchers*, ESPN (Oct. 27, 2012), http://espn.go.com/mlb/story/_/id/8558470/mlb-looks-protect-pitchers-line-drives [hereinafter *MLB*] (discussing plans for development of protective headgear for pitchers after Oakland pitcher Brandon McCarthy experienced skull fracture and brain contusion as result of being hit in head by line drive). For instance, plans for a cap liner with Kevlar, high-impact body armor material used by the military, law enforcement, and NFL players, have been considered. See *id.* (noting pitchers’ and managers’ desire that any protective measures be as minimally intrusive as possible so as not to affect pitchers’ deliveries).

185. See Crincoli, *supra* note 18, at 182 (describing general celebration for technological developments to assist humans). For a discussion of FINA ban on high tech swimsuits, see *supra* note 19 and accompanying text.

186. See Amy Nate Dearden et al., *Promoting Greater Inclusion of Disabled Students – Athletes in Interscholastic Sports Programs*, 278 ED. LAW REP. 1, 3 (2012) (discussing how physical activity can benefit children with disabilities both physically and psychologically).

187. See *id.* at 4 (noting how students with learning or cognitive disabilities have more opportunities to participate in traditional sports teams because they typically require little to no modification of game). The Government Accountability Office (“GAO”) in June 2010 issued a report entitled, “Students with Disabilities: More Information and Guidance Could Improve Opportunities in Physical Education and Athletics,” which recognized that students with physical disabilities may be at even more of a disadvantage because there are few established athletic programs that have been adapted to fit their specific needs. See *id.* (highlighting greater struggles of students with physical disabilities). Some school districts and state athletic associations have hesitated in taking action to develop more athletic programs for physically disabled students because they feel they lack the necessary experience or knowledge about logistical issues of implementation. See *id.* (describing administrators’ difficulty in understanding schools’ legal responsibilities in terms of providing programs of equal opportunity). Administrators felt they lacked guidance on determining eligibility, training coaches, forming teams, acquiring equipment, and holding competitions. See *id.* (noting districts’ struggle to balance inclusion of disabled students and provision of separate adapted programs). Further, schools felt limited by budget constraints. See *id.* (acknowledging additional costs of transporting students with disabilities and changing conditions of facilities to make them accessible).

tunities for disabled students through legislation intended to prevent disability discrimination and uphold equality.¹⁸⁸ Additionally, the Supreme Court's decision in *Martin* encourages high school athletic associations to find ways to provide reasonable access to sports for disabled student athletes.¹⁸⁹ For instance, establishing separate wheelchair races at high school track meets, as a growing number of athletic associations in the United States have done, helps provide equal access for disabled persons, as required by the ADA.¹⁹⁰ Motivations have included responding to a need for ath-

188. *See id.* at 21 (recognizing Maryland, New Jersey, and New York's initiatives). Maryland passed the Fitness and Athletic Equity Law for Students with Disabilities Act in 2008 with language that insists students with disabilities have an equal opportunity to "try-out and participate in mainstream athletic programs." *See id.* (emphasizing availability of reasonable accommodations to disabled students in order to allow them to "participate to 'the fullest extent possible'"). In addition, the Maryland Act requires schools to provide "adapted athletic programs" in order for disabled students to have more opportunities to participate in school athletics; however, exceptions to the rule are permitted in instances of safety for fundamental alteration of the mainstream program. *See id.* (recognizing possibility that sometimes inclusion of disabled athletes may pose "an objective safety risk" to students, as well as that if inclusion fundamentally alters mainstream physical education or athletic program there may not be clear opportunity for participation by disabled students). New Jersey passed its own act in 2009 intended to promote the availability of "adapted sports," "competitions that are based on mainstream sports but modified to meet the needs of those with cognitive or physical disabilities," among different school districts. *See id.* at 21-22 (describing necessity of allowing every child, including those with disabilities, who wants to play sports to be able to do so). New York passed the bill "An Act to Amend the Education Law, in Relation to Eligibility for Senior High School Athletic Competition" in order to institute regulations that would allow developmentally or physically disabled students to apply for age waivers in high school athletics. *See id.* at 22 (reflecting belief by bill's sponsors that policies should reflect newer models of inclusion).

189. *See* Looby, *supra* note 108, at 272 (describing how *Martin* offers framework for balancing reasonable modification with fundamental alteration in order to achieve accommodations for disabled student athletes); Dearden, *supra* note 186, at 26 (discussing judicial impact on athletic involvement of disabled students). The steps taken by courts to ensure high school athletic associations "grant reasonable accommodations in the form of exceptions based on individualized considerations of a student's disability" will likely result in greater accessibility to extra-curricular activities, such as sports, for students. *See id.* (describing means by which states can promote fairness for disabled students).

190. *See* Looby, *supra* note 108, at 272 (suggesting means of allowing wheelchair athletes access to track and field competitions). *See* Melanie Laughman, *OH-SAA Approves Addition of Wheelchair Track & Field Events*, CINCINNATI.COM, June 7, 2012 12:03 PM, <http://cincinnati.com/blogs/preps/2012/06/07/ohsaa-approves-addition-of-wheelchair-track-field-events/> (noting decision made by Ohio High School Athletic Association (OHSAA) Board of Directors to recommend addition of "eight wheelchair championship final events" for OHSAA State Track and Field Tournament, beginning in 2013). In separate boys and girls divisions, the wheelchair athletes will compete in the 100 meters, 400 meters, 800 meters, and shot put events. *See id.* (recognizing track and field as first sport to include wheelchair athletes as part of state tournament held by OHSAA); *see also* Mark Znidar, *High-school Track and Field: Wheelchair Athletes Get Four Events at State Meet*, THE COLUMBUS DIS-

letic programs for disabled students, as well as recognizing and eliminating existing discrimination against athletes with disabilities as a result of litigation.¹⁹¹ Furthermore, other sports may be considered for incorporation, with various modifications, into high school sports based on their appearance at the Paralympics.¹⁹²

PATCH (June 8, 2012, 5:34 AM), <http://www.dispatch.com/content/stories/sports/2012/06/08/wheelchair-athletes-get-four-events-at-state-meet.html> (highlighting ability of 6,000 to 8,000 students in Ohio who would have opportunity to participate in OHSA wheelchair events); *see also* Michael Popke, *More States Accommodating High School Wheelchair Racers*, ATHLETIC BUSINESS MEDIA, INC. (Aug. 2012), <http://www.athleticbusiness.com/articles/article.aspx?articleid=3900&zoneid=9> (recognizing Iowa High School Athletic Association's (IHSA) growth in accommodations for wheelchair athletes from state track and field competitions in 1990 to cross country races in 2010). Athletes raced on sleek, low-to-the-ground three-wheel racing chairs in the same race as able-bodied runners, but because the runners were aware of the wheelchair athletes' presence the IHSA determined there was no threat of interference. *See id.* (describing how wheelchair athletes raced on same hilly and uneven terrain as all other able-bodied runners, although they were given head start). While the 2012 Iowa State Track & Field meet allowed wheelchair and able-bodied racers to compete together, future races may arrange the start of the wheelchair races farther in advance of the runners in order to avoid as much involvement as possible between competitors. *See id.* (noting that although no collisions or injuries occurred, safety is still major concern to cross-competition).

191. *See* Popke, *supra* note 190 (offering various reasons for enactment of athletic competitions for disabled students). Former chair of the National Federation of State High School Associations' Track and Field and Cross Country Rules Committee David Anderson stated the IHSA responded to a need identified by schools and families for inclusion of wheelchair athletes at high school sporting championships. *See id.* (describing response to students telling state association "this is something you should be doing"). The Minnesota State High School League has recently agreed not only to double the amount of track and field events available for wheelchair athletes but also to allow such competitors to score points for their teams. *See id.* (acknowledging changes were result of lawsuit brought by wheelchair student athlete against Waterville-Elysian-Morristown High School for treating wheelchair track races as exhibition sport). The Illinois High School Association ("IHSA") has also announced its intention to create a state finals pilot program for athletes in track and field, cross country, swimming, diving, and bowling. *See id.* (describing new supplemental measures to IHSA's current accommodations of athletes with wheelchairs or prosthetic limbs, paralysis, or visual or hearing impairments competing in basketball, gymnastics, golf, bowling, swimming, track and field, and cross country). The actions taken by the IHSA may be the result of a lawsuit, which attempted to enforce an injunction on the IHSA to end discrimination against athletes with disabilities and set up state-qualifying standards for such athletes. *See id.* (suggesting efforts of IHSA may be led by hope to generate more interest for student-athlete participation, which may help decrease discrimination against disabled athletes).

192. *See Paralympics: 10 Lesser-Spotted Things*, BBC NEWS (Sept. 5, 2012), <http://www.bbc.co.uk/news/magazine-19477447> (recognizing basketball is played in Paralympics with court same length as in Olympics and hoops at same height as in Olympics). Developers of a wheelchair version of basketball wanted to keep the game as true to the sport as possible by adapting as few rules as possible. *See id.* (noting belief that game would not be same if baskets were lowered). Consequently, wheelchair basketball can be played on any basketball court. *See id.* (sug-

As high school athletic associations take on more accommodations, greater guidance may be needed from parents, school districts, and potentially even the United States Department of Education to help schools understand more clearly their responsibilities in providing programs and reasonable accommodations to disabled students.¹⁹³ Literature offering suggestions for amending school policies may help guide state athletic associations and school districts to work together toward achieving more inclusive and encompassing programs.¹⁹⁴ Although schools and athletic associations may establish parameters intended to allow disabled student athletes greater access to sports, there may be times when separate adaptive programs are the only viable options for participation.¹⁹⁵

The Paralympics may seem like a solution to the issue of prosthetics as a coping mechanism for physical disabilities in athletic competitions with able-bodied athletes, because the “Paralympics exist to give disabled athletes a venue in which they may (and do) excel in athletics.”¹⁹⁶ However, recent case law reveals that Paralympic athletes are still striving for adequate and equal support

gesting few modifications would be necessary to incorporate wheelchair basketball into athletic programs).

193. See Dearden, *supra* note 186, at 26 (describing potential for collaboration with state athletic associations regarding disabled student athletes).

194. See *id.* at 24 (listing four recommended actions for schools and school districts). Schools and state athletic associations should work together in developing better waiver policies that would be based on each individual athlete’s unique circumstances. See *id.* (suggesting schools may have substantial negotiating power because athletic associations do not exist without member schools). Schools should also develop and establish actual procedures for considering individual students’ requested exceptions. See *id.* (recommending individualized approach in order to achieve more “disability-friendly” policies). School districts should work harder to “facilitate ‘channels of communication and dispute resolution’ with students and parents.” See *id.* at 25 (suggesting such system would lead to greater resolutions and avoid litigation). Finally, schools should strive to develop a greater number of alternative ways for disabled students to participate in extracurricular and athletic activities. See *id.* (noting potential challenge for parents and schools to come up with such opportunities).

195. See *id.* at 26 (realizing eligibility may still be denied in some cases for disabled athletes, often for student’s best interest).

196. Lara Krigel Pabst, Note, *Embodying the Olympic Spirit: Why Paralympic Athletes Should Be Entitled to Proportionate Benefits Under the Americans with Disabilities Act*, 76 UMKC L. REV. 751, 766 (2008) (stating disabled athletes are entitled to such equal treatment as able-bodied athletes receive). As a mechanism by which disabled athletes can participate in sports, the Paralympics have helped such “disenfranchised groups” gain greater social acceptance and “bridge gaps in understanding between groups of people who may not believe they have much in common.” See *id.* at 768 (noting importance of ADA in combating discrimination against disabled).

and publicity.¹⁹⁷ While the Paralympics has recently experienced a surge of participation and viewer interest, it has also endured organizational problems.¹⁹⁸ In light of the struggle by professional athletes coping with disabilities to achieve privileges entitled to able-bodied elite athletes, it is not surprising that some disabled athletes strive to compete among the able-bodied in order to achieve the same prestige and standing when they succeed.¹⁹⁹

While establishing separate events for disabled and non-disabled athletes may work to a degree to provide greater access to sports, such a system is not feasible to solve the issue of athletes with surgical enhancements.²⁰⁰ At the high school level, it is extremely unlikely that there will be enough young baseball players who have undergone Tommy John surgery, or something similar, to create an entirely separate league just for those students.²⁰¹ Not only is the surgery expensive, but also encouraging young athletes to undergo the surgery to achieve greater performance will risk their health and likely lead to higher rates of injury.²⁰² Creating completely

197. See *id.* at 752 (introducing *Shepherd v. U.S. Olympic Comm.*, F. Supp. 2d 1072 (2006), and highlighting imbalance between support given to U.S. Olympic athletes and U.S. Paralympic athletes). In *Shepherd*, the plaintiffs, wheelchair athletes on the U.S. Paralympic Team, argued the Committee discriminated against them by inadequately providing them with the “services, benefits and financial and other support routinely provided to [their] Olympic counterparts.” See *id.* at 753 (stating plaintiff’s claim in case). Although the plaintiffs brought their claims under the ADA and merely asked for “equitable” or “proportionate” relief, the court held that the lesser benefits “were not a result of discrimination and that the USOC did not have a duty to allocate more resources to Paralympic athletes.” See *id.* at 752-55 (explaining court’s holding that training facilities, from which plaintiffs claimed to be excluded, are not “public” places since they are “meant for world-class athletes”).

198. See Legg, *supra* note 153, at 226 (discussing movement’s problems with developing appropriate and sufficient strategies, protocols, or other responses).

199. See Pabst, *supra* note 196, at 757 (describing *Shepherd* plaintiff’s request for access to Olympic Training Centers that able-bodied athletes already enjoy); see also Looby, *supra* note 108, at 271 (noting elite athletes’ motivation of “glory that accompanies the winning-at-all-costs mindset associated with professional sports”).

200. For a discussion of why a different solution than that afforded to wheelchair athletes would be required to address athletes who have undergone an alleged performance enhancing surgery, see *infra* notes 201-202 and accompanying text.

201. See Christopher S. Ahmad et al., *Public Perceptions of Tommy John Surgery*, 40:2 PHYSICIAN & SPORTSMEDICINE (2012), available at <https://physsportsmed.org/doi/10.3810/psm.2012.05.1966#R4> (noting players and families were often dissuaded from surgery upon learning details of lengthy and demanding rehabilitative process).

202. See Lamb, *supra* note 71 (discussing potential for “battered and stitch-ridden” athletes of the future). In particular, when patients younger than eighteen receive Tommy John surgery, they have more to worry about in terms of greater susceptibility to trauma and potential to damage the sensitive, still-developing tissue in their arm joints. See *id.* (noting widespread injuries to such growth

new sports leagues at the professional level likewise does not seem reasonable or realistic.²⁰³

3. *Define the Limits: The Answer Is in the Science*

When considering involvement of prostheses and surgery in sports performance competition, one scholar has asked, “[w]hat, indeed, should happen when the inclusion of one whose participating in an institution like baseball has never been contemplated threatens to frustrate the rules, the implicit promises, and the sport itself?”²⁰⁴ Whether “fair play and the integrity and unity of sport [will] be preserved” if all manner of performance enhancement becomes permissible within the established rules has caused great concern.²⁰⁵ Consequently, if performance-enhancing drugs threaten fair competition enough to be highly regulated, governing athletic bodies should likewise deem necessary regulations for all types of performance enhancement in the interests of the integrity of athletics.²⁰⁶ Governing sports entities must find a way to establish a standard by which eligibility in sports can be determined.²⁰⁷

Sports authorities should consider substantive concerns and policy goals surrounding illegal drug use for guidance in developing updated policies distinguishing permissible from prohibited

plates in younger athletes has coined the term “little leaguer’s elbow”). The surgery currently costs between \$10,000 and \$20,000. *See id.* (noting that although surgery itself is very costly, it is nothing compared to salary players will earn by staying in game for more years).

203. For a discussion of the reasons why an alternative sports league of surgically enhanced athletes would not be feasible, see *supra* notes 201-202 and accompanying text.

204. Stone, *Politics of Deference*, *supra* note 101, at 1242 (considering whether physical capabilities or limitations should be sufficient to exclude participation in sports or whether anti-discrimination legislation prohibits such exclusion).

205. *See Performance Enhancing Behaviour*, *supra* note 146 (questioning whether it would be “in the spirit of sport” to allow drugs to have place in competition); *see also* Henry Greely et al., *Towards Responsible Use of Cognitive-Enhancing Drugs by the Healthy*, 456.7223 NATURE 702, 704 (2008) (describing danger of “laissez-faire approach” to enhancement drugs). Values of safety, freedom, and fairness may be pushed aside to make room for powerful market forces driven by both sellers and users of such methods. *See id.* (discussing possibility of change in concerns surrounding drug use due to “promise of increased productivity and competitive advantage”).

206. *See* Floyd, *supra* note 16, at 176-77 (explaining concept of sportsmanship must be preserved by restrictions on technological innovations in context of athletics).

207. *See* Crincoli, *supra* note 18, at 182 (discussing how once-positive feelings regarding advancements of prosthetics may give way to “deep-rooted fears” of machines becoming so strong and powerful that they “overtake the natural creation”).

performance enhancement surgeries.²⁰⁸ In particular, three substantive ethical concerns posed by some scholars regarding drugs include safety, freedom from coercion to enhance, and fairness.²⁰⁹ If governing sports entities and authorities find such issues exist within the realm of elective performance enhancing surgery, they should consider turning to “scientific, professional, educational and social resources, in addition to legislation,” in order to establish a policy built on the findings of relevant experts and stake holders.²¹⁰

However, total uniformity among all sporting entities’ standards for eligibility is perhaps logistically an unattainable goal because there is neither one single organization that controls all sports nor is there one set of laws that applies to the governing body of each sport.²¹¹ The International Olympic Committee serves as “a large umbrella organization that governs elite sports competitions by both country and sport,” but not all sports fall within its governance and structure.²¹² Thus, the IAAF is the governing body for

208. See Greely, *supra* note 205, at 703 (using example of pharmaceutical performance enhancement for cognitive skills to demonstrate need for rules). For example, when it comes to cognitive-enhancing tools, there must be a distinction between using prescription drugs, such as Adderall and Ritalin, and getting help from a private tutor or a double-shot espresso. See *id.* (noting range of possible methods to stimulate cognitive skills and abilities).

209. See *id.* (discussing concerns regarding use of cognitive-enhancing drugs). In the interest of safety, policies should establish procedures that assess risks and benefits, with special attention paid to long-term effects as well as possible new side effects. See *id.* (emphasizing importance of evidence-based approach). The principle of freedom from coercion to enhance may become an issue if employers, such as team managers or the U.S. government, require individuals to undergo certain surgeries or take certain drugs for enhancement. See *id.* (posing example of U.S. soldiers who have been required to take stimulant medications to increase alertness for sake of their military performance). Finally, the issue of fairness comes into play when some individuals use performance enhancing substances or techniques while others do not. See *id.* (recognizing similar situation of unfair advantage in which some students are allowed to take test with calculator while others are not).

210. See *id.* at 704 (describing policy that is neither solely laissez-faire or legislative). Such an approach may call for mechanisms such as “an accelerated programme of research to build a knowledge base concerning the usage, benefits and associated risks” of enhancement, “participation of relevant professional organizations in formulating guidelines for their members” relating to enhancement, “education to increase public understanding” of enhancement, and legislation that brings existing law “into line with emerging social norms and information about safety.” See *id.* at 704-05 (suggesting various resources and policy mechanisms to shape evidence-based policy for evaluation).

211. See Crincoli, *supra* note 18, at 173 (describing how each organization system is governed by the laws of its home jurisdictions, which may or may not include international laws or treaties in addition to domestic laws).

212. See *id.* at 173-74 (explaining how certain professional sports, such as those of United States, are not governed by IOC federation system). The United

track and field, but the USA Track & Field (“USATF”) governs track and field in the United States.²¹³ Moreover, certain sports, like professional sports in the United States, fall outside the governance of the IOC federation system, and such sports can create their own rules for sports, provided they adhere to domestic law.²¹⁴ The downside to separate systems of sports governance, however, is that the eligibility an athlete has under one set of rules may not carry over to a different variation.²¹⁵ Despite the potential for variations in sports’ governance, such rule-making entities should still strive to establish similar and effective standards as best they can.²¹⁶

Further, the feat of defining “a single point” of unacceptable enhancement seems doubtful because new technology may only bring slight nuances between legal and illegal performance-enhancing techniques.²¹⁷ Any attempt to standardize eligibility requirements or limitations will not be able to keep up with evolving

States Olympic Committee (USOC) is an example of a National Olympic Committee (NOC), which is maintained by participating countries for sports administration. *See id.* at 173 (noting USOC is agency with delegated authority but is not considered state actor). Further, each sport has its own federation, and each country has its own national governing body (NGB). *See id.* (detailing chain of authority under IOC).

213. *See id.* (demonstrating controlling federations for track and field in United States).

214. *See id.* at 174-75 (describing how typical professional sports in United States are governed by independent leagues or association systems).

215. *See id.* (suggesting Pistorius’ permissibility to run in IAAF-sanctioned races may be useless to him if he wished to play in NFL in United States). Rulings on eligibility are generally limited to the organizations that made them and any other bodies that must follow their determinations. *See id.* (recognizing limited nature of *Martin* holding to those bodies obligated to follow holding of Supreme Court).

216. *See id.* (describing disparities in eligibility allowances due to differing rules of various governing sports entities). Although Oscar gained permission to compete in IAAF-sanctioned events, such eligibility would not help him participate in the NFL, and Casey Martin’s right to use a golf cart as an accommodation would only be valid in jurisdictions that are required to follow the ruling of the Supreme Court of the United States. *See id.* (explaining possible limitations of rulings by various authorities). Some scholars have suggested that the IAAF consider incorporating additional values past merely fairness of competition in order to respect anti-discrimination principles and align itself more closely with U.S. and U.K. law. *See Zettler, supra* note 141, at 407 (highlighting failure of IAAF rule to account for sporting ideals other than just fair competition). Some additional values that the IAAF should consider relevant to its regulation include “preserving the essence of track and field” and health and safety concerns. *See id.* at 406-08 (suggesting that IAAF should draw from rules of other sports’ governing bodies, Convention, and individual nations’ laws and case precedent in balancing multiple sports values against one another).

217. *See Performance Enhancing Behaviour, supra* note 146 (noting that such an attempt at standardization would likely raise problems of clarity and specificity).

technology.²¹⁸ For instance, establishing that a surgery restores an athlete's arm strength more than other therapeutic methods in a way that contradicts the spirit of the sport may be challenging.²¹⁹ The recent IPC controversy and investigations at the 2012 Paralympics demonstrate just how difficult it is to define the parameters of acceptable competition in today's modern technological age.²²⁰ After losing the 200m to fellow double-leg amputee Alan Fonteles Oliveira of Brazil, an astounded Pistorius questioned the integrity of the race by challenging the length of his competitor's blades.²²¹ In frustration, Oscar stated, "we're not running in a fair race here . . . I'm not taking anything away from Alan's performance, but I can't compete with Alan's stride."²²² The irony, perhaps, is that Pistorius may in fact have contributed to his own

218. See Jacques, *supra* note 14, at 122-23 (recognizing that, in context of drug use, testing will always be one step behind those actually using substances and new technologies to conceal such use).

219. See Dasgupta, *supra* note 165 (describing how surgeries, such as stem cell interventions, may undervalue elements of sports, such as resilience, when such surgeries can rejuvenate athletes whose careers would have otherwise been over).

220. See Gareth A. Davies & Jacquelin Magnay, *Paralympics 2012: IPC Investigate Use of Longer Prostheses After Complaint from Oscar Pistorius's South African Team*, THE TELEGRAPH (Sept. 05, 2012, 11:40 AM), <http://www.telegraph.co.uk/sport/olympics/paralympic-sport/9522340/Paralympics-2012-IPC-investigate-use-of-longer-prostheses-after-complaint-from-Oscar-Pistorius-South-African-team.html> (noting IPC's agreement to discuss and clarify rules regarding blade lengths after Games have finished). IPC equipment rules forbid athletes changing blade lengths during competitions. See *id.* (explaining additional difficulty inherent in switching blades due to different running techniques and styles required by different length blades).

221. See Owen Gibson, *Oscar Pistorius Blades Row Reignited by South African Officials*, THE GUARDIAN (Sept. 5, 2012), <http://www.guardian.co.uk/sport/2012/sep/05/oscar-pistorius-blades-row> [hereinafter Gibson, *Oscar Pistorius*] (describing aftermath of surprising results for 200m at Paralympics). The South African Paralympic Committee raised the issue of competitors illegally changing the height of their blades between the heats and the finals to the IPC. See *id.* (describing claim IPC was asked to investigate). IPC director of communications, Craig Spence, explained that IPC did not measure and record the actual heights of athletes before each race because its standard practice is just to measure to make sure athletes are "beneath the maximum height permitted under the formula it uses to calculate the allowable length of prosthetic blades." See *id.* (explaining relevance of dispute over blade length and possible impact of longer blades).

222. Gary Kingston, *Oscar Pistorius Apologizes For Complaints After Paralympic 200-Metre Final*, NATIONAL POST (Sept. 3, 2012), <http://sports.nationalpost.com/2012/09/03/oscar-pistorius-apologizes-for-equipment-complaints-after-paralympic-200-metre-final/> (quoting Pistorius' disappointment and displeasure at losing what he deemed an unfair competition). Pistorius later stated that it was wrong to raise concerns about the blade length discrepancy immediately after stepping off the track, but at that point the British press had already criticized "his lack of magnanimity and called him ungracious." See *id.* (describing aftermath of Pistorius' statement).

chagrin by limiting himself to wearing blades approved for able-bodied competition.²²³

Independent committees' research will likely prove helpful in establishing uniform standards, especially in terms of developing sports equipment.²²⁴ Oscar Pistorius' research is an excellent example of how additional knowledge and understanding can shed light on a confusing situation.²²⁵ Studies have also been conducted on public perceptions of Tommy John surgery, comparing the differences between what players, parents, and coaches believe of the surgery's potential with the surgery's actual effects.²²⁶ Swimming provides another example of athletic organizations faced with bans or regulations regarding equipment, such as the high-tech body swimsuit, that have conducted studies that have helped determine whether such technologically advanced equipment actually enhances performance.²²⁷ Although it will be a challenge for researchers to keep up with technology, the debate concerning permissibility of sport technologies makes it even more important that committees with knowledge of particular sports stay updated on new developments.²²⁸

223. See *id.* (noting Paralympics permit longer blade lengths than Olympics). In fact, Oscar raced in the 200m with his blades sanctioned for non-disabled competition, which meant that he raced at a lower height, and thereby a smaller stride, than he was permitted to under IPC rules; see also Owen Gibson, *Paralympics: Running Blades Row Deepens As Pistorius Returns to Track*, THE GUARDIAN (Sept. 5, 2012), <http://www.guardian.co.uk/sport/2012/sep/05/paralympics-running-blades-pistorius> [hereinafter Gibson, *Paralympics*] (explaining Pistorius' choice to race in non-disabled competitions, such as Olympic Games, may have disadvantaged him by depriving him of nine centimeters of additional height). Under IPC rules, Pistorius was permitted to wear prosthetics in the Paralympics that would increase his height to 193 cm. See *id.* (noting Pistorius in fact races at height of 184cm because he uses blades sanctioned for competition against non-disabled athletes).

224. See Floyd, *supra* note 16, at 178 (suggesting research as possible solution for determining actual effects of innovative technology); see also Crincoli, *supra* note 18, at 187 (describing need for greater support of "further research into physiology and human movement" in order for athletic world to better understand new scientific and technological developments).

225. For a discussion of the tests Oscar conducted in order to prove his eligibility, see *supra* notes 48-51 and accompanying text.

226. See Ahmad, *supra* note 201 (describing questionnaire to measure individuals' perceptions of Tommy John Surgery against hypothesis that public perception may be mistaken with regard to "indications, operative technique, risks, recovery time, and benefits").

227. See Floyd, *supra* note 16, at 178-79 (discussing practicality for each sport's athletic association to "appoint a committee to oversee technological advancements, resulting in an establishment of uniform methods and conclusions for each sport concerning relevant innovations").

228. See *id.* at 179 (recognizing need for answers to new questions posed by technological advancements); see also Zettler, *supra* note 141, at 408 (describing danger of IAAF establishing ineffective policies or policies with negative effects

If any governing sports authority attempts to develop a set of uniform standards for performance-enhancing techniques, the standards must be “specific, not subject to various interpretations, and apply equally to all competitors.”²²⁹ Athletes using prostheses because they are otherwise unable to compete may have to pass specific and well-developed tests that determine whether the enhancement allows the athlete to meet the level of standardization or whether, in fact, it causes the athlete to surpass it.²³⁰ The IOC has already taken steps toward this plan by measuring blades before running races, but it will have to make sure it stays up to speed with the pace of advancing technology.²³¹ The CAS will soon hear more cases regarding eligibility requirements for athletes and questions regarding what types of technology are permissible in the context of athletic competition.²³² Athletes need more substantial law, whether through a ruling by an entity like the CAS or through regulation by sports entities, which would establish a well-defined stan-

due to lack of adequate understanding of relevant issues and science concerning prostheses). The IAAF needs to catch up on scientific studies and research regarding sports technology in order to do more than merely give athletes “some idea” of how it will judge sports technology in the future. *See id.* (discussing usefulness of established parameters for permissible technology among manufactures and athletes).

229. *See* Floyd, *supra* note 16, at 179 (recommending clarity for any future standards).

230. *See id.* (explaining example of “standardization technique” used for ski jumping events to ensure no additional enhancing effects were used). The 1980 Winter Olympic Games established the standard test of using a machine to measure the air that passes through ski jumpers’ suits so as to ensure “that the permeability exceeds a minimum limit.” *See id.* (describing standard practice for all Nordic events in order to ensure fairness of competition despite advancements in technology); *see also* Legg, *supra* note 153, at 229 (describing example of IPC responding to implications of performance enhancement with selective testing of wheelchair competitors prior to each race). Autonomic Dysreflexia (“AD”) involves athletes with spinal cord injuries self-inflicting bodily harm to generate a body reaction “similar to an enormous adrenaline rush.” *See id.* at 228 (explaining practice by some athletes in order to achieve better performances). By monitoring competitors’ blood pressure prior to racing, the IPC attempted to prevent athletes from inducing AD. *See id.* at 233-35 (exploring policies at 1996 Atlanta Summer Paralympic Games to prevent intentional AD responses). The IPC justified its practice by pointing out that inducing AD is a potential health risk and that it “undermines the fairness of competition for those who do not engage in the practice.” *See id.* at 235 (stating concerns of IPC in taking action to prevent AD inducing at Paralympic events were appropriate).

231. For a discussion of IOC’s measurement strategies for prostheses-using athletes, *see supra* note 223 and accompanying text; *see also* Crincoli, *supra* note 18, at 186 (describing how “science and technology have outpaced our rule-makers”).

232. *See* Mitten & Davis, *supra* note 47, at 78-79 (discussing nature of CAS as “private, specialized arbitral body” set up to “resolve sports-related disputes”). For a discussion of the limited nature of the CAS’ holding in the case of Oscar Pistorius, *see supra* notes 56-58 and accompanying text.

dard to inform athletes through clear notice of what qualifies as an impermissible performance enhancement method.²³³

IV. POST-GAME RECAP: TECHNOLOGY RACES PAST TRADITION

There may come a time when sports enthusiasts refer back to the good ol' days of sports when athletes competed on pure talent alone without any significant help from technology to make them stronger, faster, or more accurate.²³⁴ Babe Ruth will be viewed with even more awe for all his accomplishments in the game of baseball because he played with a lazy eye; no athlete today would dream of foregoing surgical correction for that condition.²³⁵ If human enhancement becomes a more ingrained element of sport, nostalgic sports authorities may still try to hold onto the idea of "natural human" competition, even if athletes themselves no longer see the need or relevance.²³⁶ No matter how far technology pushes man into the realm of machines, natural talents based on inherent human capacities will still be appreciated, even if only as a thing of the past.²³⁷

233. See Mitten & Davis, *supra* note 47, at 83 (explaining "duty of confidence" standard for international sports governing bodies, which CAS impliedly applied to its position on doping rules). As the CAS declared, "clarity and predictability are required so that the entire sport community are informed of the normative system in which they live, work and compete, which requires at the very least that they be able to understand the meaning of the rules and circumstances in which those rules apply." *Id.* at 84 (quoting CAS panel).

234. See Lamb, *supra* note 71 (discussing how injured athletes in past may have had shorter careers than athletes today who now have access to greater medical attention that can prolong their athletic careers); see also Stone, *Politics of Deference*, *supra* note 101, at 1243 (describing "old-timers" who view baseball as solemn ritual, something more than game or business, almost like "holy calling"); Maureen A. Weston, Comment, *The Intersection of Sports and Disability: Analyzing Reasonable Accommodations for Athletes with Disabilities*, 50 ST. LOUIS U. L.J. 137, 137 (2005) (describing sporting public's approval and awe of accomplishments of athletes who competed in their respective sports "'despite' their disabilities or by 'overcoming them'"). Kenny Walker succeeded as an All-American defensive tackle at the University of Nebraska and played professionally for the Denver Broncos despite being deaf, and Jim Abbott competed in the professional baseball leagues as a pitcher despite only having one arm. See *id.* (noting two particular cases of athletes who competed in professional sports leagues in spite of their physical disabilities).

235. See *Athletes Love LASIK*, *supra* note 78 (implying that if LASIK had been available to Babe Ruth he would have set even more records than he did); see also Bryant, *supra* note 92 (acknowledging Jim Rice and Willie Mays as examples of athletes who may have had longer careers in professional baseball had laser eye surgery been available to them).

236. See Miah, *supra* note 14, at 318 (describing possible future difficulty in keeping concepts of enhancement and of natural human separate).

237. See *id.* at 301 (considering changing "landscape of sport technologies and policy"). "Some day the difference between machines and biology will be hard to discern. Yet "pure" life will still have its place . . . because of its autonomy . . .

Despite the nostalgia that may survive an age of greater technological involvement in sport, it may be unfair, and frankly impossible, to prevent athletes from using such enhancements.²³⁸ Many athletes, such as Colon and Pistorius, have already returned to their respective sports, and it may be too late to recall all athletes in similar situations who have revitalized their careers after undergoing surgery or after having received permission to race with prosthetics.²³⁹ While many professional and amateur sports organizations would fight to restrict any type of non-organic performance-enhancing strategy, others find that such enhancements have become so prevalent in today's world of sports that, "the only real option is for the sporting authorities to let athletes use what they want, as long as they do it safely."²⁴⁰ Sports organizations and authoritative bodies cannot delay deciding how to handle the growing performance-enhancing phenomenon.²⁴¹

The global fame of the Olympics will keep technically innovative procedures and devices at the forefront of debates regarding international sports issues.²⁴² When athletes like D.J. Vaderwerf,

the organic and the machine are merging." *Id.* (quoting K. Kelly, *Out of Control: The New Biology of Machines*, London: Fourth Estate, 1994 at p.165).

238. See Del Cid, *supra* note 178, at 193 (questioning whether fair competition is in fact possible). When the general public can "use erectile function and libido drugs, have plastic surgery to enhance breast and penile size, and use liposuction to lose fat," it seems contradictory to tell athletes they must "perform at superhuman levels without any means of superhuman recovery." *Id.* (describing disparity between standards normal people are held to that those which athletes must meet).

239. See Bryant, *supra* note 92 (suggesting Colon demonstrates that it is too late to make effective choices that would keep performance enhancing surgeries out of certain sports, like baseball). David Wells, a former MLB pitcher, argued for deregulation of the entire game of baseball and elimination of pretense of virtue, values, character, and natural competition surrounding professional sports. See *id.* (citing position by those who find questions of performance enhancement and ethics too daunting to answer). Unless sports leadership is more proactive about regulation than it was with baseball under the steroid era, it may be merely a façade that sports are primarily contests of athletes' natural abilities. See *id.* (recognizing lack of regulation and acknowledgment during steroid era that allowed development of underground culture of cheating).

240. See Thompson, *supra* note 16 (noting how if ultimate goal is health and safety, it may be better to have policy of medically supervised enhancing).

241. See Hochman, *supra* note 20 (considering notion that Pistorius and other such athletes, may only be several upgrades away from leaving "the Usain Bolts and Tyson Gays of the world in the dust"); see also Miah, *supra* note 14, at 301 (recognizing further innovations of enhancement technology in sport are "imminent").

242. See Tiplady, *supra* note 15 (realizing increased success of 2012 Paralympics, as well as greater international attention given to issue of prostheses in sports, was presumably due to greater anticipation and recognition after fame and success of Oscar Pistorius). Although Pistorius set the record of being "the first-ever athlete to compete in both the Olympic and Paralympic Games, the 2012 Paralympics also seemed to set its own record by selling out tickets for the first time

Scout Bassett, Oscar Pistorius, Manny Banuelos, and Bartolo Colon disregard their physical limitations and find ways to participate in the sports they love, whether through the use of modern prosthetics or rehabilitating surgeries, it seems almost cruel to deny them the chance of pursuing their dreams at the highest levels of competition.²⁴³ In order to overcome any prejudices for an assumed competitive advantage against athletes whose physical capabilities have been affected by technology, sports associations must advocate for true scientific findings rather than uniformed presuppositions about possible advantages new technologies may confer.²⁴⁴ Both prosthetics and innovative sports surgeries require further extensive research to determine whether they are merely reparative and restorative or whether they cross the line and unfairly enhance performance.²⁴⁵

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in its sixty-four year existence and gaining “unprecedented levels of TV coverage worldwide.” *Id.* (realizing this Paralympics probably drew greatest “viewing audiences to date”).

243. For a discussion of the obstacles of physical limitations overcome by the indicated athletes, see *supra* notes 1-5, 39-42 and accompanying text.

244. See Stone, *Game of Pleasant Diversion*, *supra* note 105, at 398 (discussing means by which high school programs in particular can work to “ensure fair and equitable treatment to all athletes and guarantee that sports are open to all persons, regardless of their disability”).

245. For a discussion of the importance of further research on both prostheses and sports surgeries, see *supra* <CITE_Ref213242434>228 and accompanying text.

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